National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Canada

UNIVERSITY OF ALBERTA

INTERPRETIVE SCHEMES AS A CONTINGENCY: THE IMPACT OF MARKET ORIENTATION ON ORGANIZATIONAL STRUCTURE, CONTROL AND MARKETING EFFECTIVENESS

BY

©

JOHN MARK RIGBY

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

IN

ORGANIZATIONAL ANALYSIS
FACULTY OF BUSINESS

Edmonton, Alberta
Fall 1993

National Library of Canada
Acquisitions and Bibliographic Services Branch
395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale du Canada
Direction des acquisitions et des services bibliographiques
395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-88231-X

Canada

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: John Mark Rigby

TITLE OF THESIS: Interpretive Schemes as a Contingency: The Impact of Market Orientation on Organizational Structure, Control and Marketing Effectiveness

DEGREE: Doctor of Philosophy

YEAR THIS DEGREE GRANTED: 1993

Permission is hereby granted to the University of Alberta Library to reproduce single copies of this thesis and to lend or sell such copies for private, scholarly or scientific research only.

The author reserves all other publication and other rights in association with the copyright in the thesis, and except as hereinbefore provided neither the thesis nor any substantial portion thereof may be printed or otherwise reproduced in any material form whatever without the author's prior written permission.

John Rigby

935 Emmeline Terrace
Saskatoon, Saskatchewan
S7J 5G7

UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled **INTERPRETIVE SCHEMES AS A CONTINGENCY: THE IMPACT OF MARKET ORIENTATION ON ORGANIZATIONAL STRUCTURE AND CONTROL AND MARKETING EFFECTIVENESS** submitted by **JOHN MARK RIGBY** in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

CR Hinings
C.R. Hinings

J L Brown
John L. Brown

A Finn
Adam Finn

JD Jobson
J.D. Jobson

E.A. Holdaway
Edward A. Holdaway

Christine Oliver
Christine Oliver

September 14, 1993

To Wendy

Abstract

This thesis examines the antecedents, interrelationship, and consequences of organizational structure and control. Using a contingency framework a model was developed which proposed that organizational structure and control are caused by environmental uncertainty, technology routinization, size and interpretive schemes. The interpretive scheme of interest is market orientation. The model further proposed that the organizational structure and control system resulting from market orientation will result in marketing effectiveness. Organizational control was modeled as a third order construct which causes the tools of control, bases of control (type of power employed), and focus of control. Focus of control will be either on behaviour or outputs. Structure is modeled as a second order construct causing configuration and organizational levels.

To test the model, data were collected from 137 medium sized Canadian accounting firm offices. The data were analyzed using structured equation modelling with LISREL. The original model was revised, utilizing a sample of 89 duplicate office surveys, by deleting the concept of focus and by showing power as being caused by both control and structure and by depicting structure as a first order construct. The revised model was tested on the main database of 137 offices and was confirmed as conforming to the data.

Acknowledgements

No thesis is written without the writer at some point leaning heavily on those around him or her for intellectual, social (and occasionally physical) support. I have perhaps leaned more often and more heavily than many and it is my happy duty to thank those who have borne me up over the last while.

My supervisory committee has been consistently helpful and supportive. I have no war stories to share with other students travelling this path for my committee and I never engaged in battle. My supervisor, Bob Hinings, has modeled for me true scholarship. He has given me patient intellectual guidance and extended to me his friendship. This thesis has been immeasurably improved as a result of his counsel. Adam Finn has spent many hours helping me to make sense of the arcane world of structured equation modelling. His thoughtful and thorough approach to research guided me around many pitfalls (and out of quite a few others). John Brown and Dave Jobson, the remaining members of my committee, likewise offered suggestions designed to genuinely improve both the thesis and my own understanding of the issues the study addressed.

I feel a kinship with all of my fellow Ph.D. students but especially Tom Lawrence and Colleen Collins-Dodd. Some of my most illuminating moments were over coffee and a donut with these good friends. They have both challenged me and encouraged me at each step of this process. My new colleagues at the University of Saskatchewan have also been very supportive as I struggled with the dual challenges of a new position and an unfinished thesis. Maureen Somers has been unrelenting in her encouragement.

Most of all I must pay tribute to my entire family. My father and mother never quite understood why I wanted a Ph.D. in Business but never questioned my decision to pursue it. My father passed away early in my program and I continue to miss his humour and wise counsel. My father- and mother-in-law, Dale and Bobby Beckman have likewise encouraged me greatly as I progressed through the program.

It is to my immediate family that I owe the greatest debt for they have paid the greatest price. My son Jeremy was born early in my program and now as he approaches six years of age he has never known a dad who did not have to work on his dissertation -- a word he learned to say at a startlingly young age. Andrew came along at the end to help me with my final push. My greatest help and encouragement has come from Wendy whose faith in my abilities has far surpassed my own. Without her gentle prodding and support this thesis would never have been completed and to her it is dedicated with love.

TABLE OF CONTENTS

Chapter 1: Introduction and Overview 1

Chapter 2: Theoretical Issues 6

- Organizational Structure 7
- Organizational Control 14
- Toward a Resolution 24
- Theoretical Implications 27
- The Role of Interpretive Schemes 29
  - Market Orientation as an Interpretive Scheme 32
  - Theoretical Implications of Marketing Orientation 36
- Other Issues 39
- Summary 40

Chapter 3: Methodology 45

- Overview 45
- Data Collection 46
  - Sample 46
  - Compilation of the Mailing List 48
  - Initial Sample Characteristics 49
  - Rationale 50
  - Survey Administration 51
- Development of the Instrument 54
  - Dependent Variables 59
  - Independent Variables 61
- Further Measurement Refinement 64

Chapter 4: Structural Refinements 72

- Structural Refinements 73
  - Market Orientation 74
  - Organizational Structure 76
  - Organizational Control 78
  - Structure and Control 83
- The Complete Structural Model 85
- The Measurement Model 88

Chapter 5: The Structural Model 106

- Confirmatory Testing 106
  - Discussion of the Model 107
  - Other Observations 111
- Results of the Regression Test for Interactions 116

Chapter 6: Implications 121

The Traditional Contingencies 121
Structure Control and Power 127
Interpretive Schemes 135
Marketing Effectiveness 136
The Effect of Market Orientation on Marketing Effectiveness 137
Conclusions Regarding Marketing Effectiveness 139
The Interactions of Interpretive Schemes with Contingencies 140
Status of the Propositions 141

Chapter 7: Summary and Conclusions 144

Summary of the Theoretical Findings . . . 147
Limitations of the Study 149
Future Research 151
Conclusions of the Study 153

Bibliography 157

Appendices 163

LIST OF TABLES

Summary of Scale Properties 58

Lisrel Notation 66

Lisrel Measures of Fit 70

Three Models of Market Orientation 74

Two Models of Structure 77

Correlations of the Components of Control 81

Three Models of Control 82

Comparing Three Final Models 87

Variable Notation 108

Testing for Interactions
Control as Dependent 118

Testing for Interactions
Structure as Dependent 118

Testing for Interactions
Control as Dependent
Market Orientation as Two Constructs 118

Testing for Interactions
Structure as Dependent
Market Orientation as Two Constructs 119

LIST OF FIGURES

The Initial Contingency Model 42

Interpretive Schemes as Contingency 43

Marketing Effectiveness as an Outcome of the Contingencies and Structure and Control 44

Flow Chart of the Data Analysis 71

Market Orientation as Two Factors 92

Original Specification of Structure 93

Structure as One Factor 94

Original Specification of Control 95

Control as One Factor 96

Control as Four Factors 97

Third Order Model of Control 98

Control and Structure with no Relationship Specified 99

Control Causing Structure 100

Model 1 101

Model 2 102

Final Model 103

First Measurement Model 104

Final Measurement Model 105

Specification of the Final Model 120

Original Model 155

Final Model 156

Chapter 1: Introduction and Overview

Since the inception of organizational theory, when it first began to separate itself from sociology as a discipline, there has been an abiding interest in issues of organizational structure and organizational control. During the 1960's and 1970's much of the ground-breaking work in organizational theory examined organizational structure or control or some mixture of both. The centrality of discussions relating to structure and control in earlier writings of organizational theory grew from the recognition of the overriding importance of these concepts in gaining both a theoretical and practical knowledge of modern organizations. The concepts of structure and control are the framework that both shape and inform theory. The application of structure and control is the handle whereby the practitioner is able to manage and direct the organization.

In more recent years, there has been rather less written about the topics. Nonetheless, the questions that arise from consideration of these issues are far from exhausted. Indeed, many important theoretical and empirical problems remain to be resolved. Of these, the most fundamental is determining the most useful conceptualizations of structure and control the theoretical relationship between these conceptualizations. Relatively little attention has been paid to the precise nature of organizational structure and control and to the interrelationship between the concepts. Yet, it will be demonstrated that a considerable amount of confusion exists about the concepts. This confusion is critical because it may underlie several perceived empirical inconsistencies in the literature.

Consideration of possible underlying causes of structure and control remains a second, related area worthy of inquiry. The work of contingency theorists has been distilled to the generally accepted assertion that structure and control are caused by environmental uncertainty, technology, and size. While empirically this finding has been reasonably consistent, it seems somewhat unsatisfying theoretically, stripping, as it seems to, organizations of human content and values. Finally, the impact of structure and control on various elements of effectiveness is under researched.

This thesis has taken up afresh structure and control and several of the key issues suggested by the concepts. Operating within a contingency framework, it developed a causal model which proposes a theoretical resolution of the confusion of the issues of structure and control. While retaining the three main contingencies of contingency theory, the model adds the important concept of interpretive schemes as a causal explanation of structure and control. Organizational structure and control systems *per se* are depicted as two distinct but interrelated concepts which share a common causal framework. Finally, the model shows one aspect of effectiveness, marketing effectiveness, as resulting from structure and control.

In more detail, the model contains environmental uncertainty, technology, and size as underlying causes of structure and control. It adds to these traditional contingencies the concept of interpretive schemes. It will be argued that market orientation in particular is in fact best understood as a specific interpretive scheme. As an interpretive scheme it will affect a business unit's structure and control in very definite ways. Further, marketing effectiveness will result from the structure and control systems implied by market orientation.

The thesis tested the efficacy of the model through an empirical study of Canadian accounting firms. Accounting firms were chosen as an appropriate test of the theoretical arguments because at the time of the study Canadian accounting firms werel increasingly moving to a market oriented interpretive scheme. Changing to a market-oriented interpretive scheme will involve consideration of, and probably adjustments to, the structure and control processes of an organization. Studying organizations in the midst of such change will emphasize the nature of the underlying relationships.

The thesis is organized into seven Chapters. Chapter 2 begins with a review of the foundational studies relating to organizational structure and control systems. It demonstrates that a certain confusion has existed in the literature as a result of those early studies. The chapter then proposes a resolution to this confusion and details the causal model. The model shows structure and control as resulting from environmental uncertainty, technology routinization, size, and market orientation. Organizational structure and control, in turn, is shown to cause marketing effectiveness. It should be noted that Chapter 2 does *not* undertake an exhaustive review of all empirical studies relating to structure and control in the past 30 years or so. The first reason for this approach is simple acknowledgement that such a task is impossible for all practical purposes. Hundreds, if not thousands, of articles have been published in this area. The second, more telling reason, is that it is contended in Chapter 2 that the initial understanding of structure and control is irrevocably flawed. As such, empirical work using this flawed understanding, as most work since the 1960's does, is really of only tangential interest to the present study.

Chapter 3 discusses the method employed in this study and discusses in detail the development and refinement of the measurement scales. The unit of analysis is the local offices of medium-sized Canadian accounting firms. A mail survey of 514 partners in 200 accounting offices in 123 Canadian cities was undertaken. In total, 226 surveys from 137 offices, representing 44% of the partners contacted and 69% of the offices contacted, were returned.

Chapter 4 discusses adjustments that were made to the model proposed in Chapter 2, utilizing a subsample of duplicate offices. Chapter 4 also contains details of the development of a measurement model which is used to determine the acceptability of the fit of the theoretical model. Chapter 5 reports the results of confirmatory tests of the theoretical model while Chapter 6 considers the theoretical implications of those results in detail. Chapter 7 presents a summary of the study and overall conclusions.

CHAPTER 2: THEORETICAL ISSUES

A popular MBA-level introductory textbook (Daft, 1992) distinguishes unequivocally between organizational control and organizational structure. "Organizational control is a cycle that includes the four stages of target setting, measuring and monitoring, comparing performance against standards, and feed-back" (p. 296). In contrast:

> Organization **structure** is reflected in the organization chart. The organization chart is the visible representation for a whole set of underlying activities and processes in an organization. The three key components in the definition of organization are as follows:
>
> **1.** Organization structure designates formal reporting relationships, including the number of levels in the hierarchy and the span of control of managers and supervisors.
>
> **2.** Organization structure identifies the grouping together of individuals into departments and the grouping of departments into the total organization.
>
> **3.** Organization structure includes the design of systems to ensure effective communication, coordination, and integration of effort across departments. (p. 179)

Despite Daft's apparently straightforward definitions, when the academic literature is examined very different working definitions seem to be used -- different from Daft's rendering and different from each other. Conceptualizations of organizational control and organizational structure seem to be confused, confounded or frankly equated. It seems clear that developing a detailed empirical model of the underlying causes of organizational structure and control, and of their outcomes, as this thesis proposes to do, is rather pointless without a precise understanding of what those central terms mean.

This chapter reviews major statements of structure and control of contemporary organizational theory and reconciles some of the inconsistencies in the literature. A clear distinction is made between the concepts while simultaneously recognizing their correlated nature. The choice of literature considered in the following review reflects the fact that while a great mass of studies have considered various aspects of organizational structure and control from an empirical perspective, most of these studies have accepted uncritically the original theoretical perspectives and construct formulations of several foundational contingency studies. Accordingly, the review which follows concentrates on those early studies in order to understand the roots of the current lack of clarity in the literature.

Treatments of structure and control are initially examined separately and then a theoretical union of the concepts is proposed.

Organizational Structure

Within the vast sea of research examining organizational structure, two particularly influential historical currents may be discerned. The first is the work associated with the researchers at Aston University. Concerned, initially, with Weberian concepts of bureaucracy, the Aston group, and their followers, generated an impressive and reasonably consistent flow of empirical research. Their work considered organizational structure as it (a) relates to context, (b) can be formed into taxonomies, and to a lesser extent (c) as it relates to performance (Donaldson, 1985). The second major stream springs from the work of Lawrence and Lorsch (1967). These latter authors have had a significant theoretical impact on the study of organizational structure. Their focus is on the influence on structure of information processing needs of an organization as mitigated by environmental uncertainty. We will consider these two groups in order.

A complete report of the Aston studies can (and does) fill volumes (Hickson & McMillan, 1981; Pugh & Hickson, 1976; Pugh & Hinings, 1976; Pugh & Payne, 1977). As such, it is well beyond the scope of this present effort to exhaustively review the Aston work. Rather, it is the intent of this chapter to consider how the Aston researchers described and measured organizational structure.

The original Aston program of research began in the early 1960's and culminated in a series of articles at the end of that decade. In an initial paper, reporting the intent of their work, Pugh and his associates (Pugh et al., 1963) mapped out an ambitious research agenda:

> we have attempted to develop an empirically based multi-dimensional analysis of the structural variables of organization. In order to do this we must first of all isolate the conceptually distinct elements that go into Weber's formulation of bureaucracy. Then the relationships between these elements become a subject for

> empirical investigation and not for a priori postulation. The insights of Weber can then be translated into a set of empirically testable hypotheses. (p. 298)

The group reported five theoretical structural dimensions and seven contextual variables that occupied the bulk of their attention during the study (Pugh et al. 1968). The structural variables were: (a) specialization, (b) standardization, (c) formalization, (d) centralization, and (e) configuration. Specialization indicates the division of labour within an organization. Standardization has two aspects, the first concerned with procedures and the second with roles relating to an office. Formalization is the extent to which communications are written down and filed. Centralization reflects the decision making structure of an organization while configuration is concerned with vertical and lateral spans of control and other issues such as department size.

Pugh et al. (1968) report that during the course of the study the five theoretical dimensions were operationalized by way of 64 subscales. The researchers used the scales in two slightly different ways. First, they used the five theoretical dimensions, as measured via the subscales, to construct profiles of the organizations under study. Second, 16 of the scales were factor analyzed revealing four underlying dimensions which Pugh and his associates labelled structuring of activities, concentration of authority, line control of the workflow, and relative size of supportive component. The point of the latter exercise was to establish empirical dimensions from the data rather than simply depending upon the efficacy of the original theoretical dimensions.

Donaldson (1985) argues forcefully that a host of replications in the two decades since the original Aston studies yielded remarkably consistent findings. He asserts that the Aston approach to organizational analysis has upon it the stamp of orthodoxy and that approach continues to be the most helpful way to study organizational issues. Whatever the merits of Donaldson's position from a methodological perspective may be, as researchers have turned their attention to processual and control issues, the Aston studies have become increasingly problematic from a theoretical perspective.

The specific difficulty with the Aston work for the researcher attempting to distinguish between organizational structure and organizational control is that the Aston scales were not constructed with that distinction in mind. On the contrary, the Aston scales very explicitly use organizational control systems as elements of the scales. In fact, Child (1973) uses various Aston scales as measures of control in his study of the effect of different strategies of control on organizational behaviour. Most of the Aston scales can be used in this way but perhaps best the illustration is afforded by the standardization and formalization scales which include systems as a measure of structure. As we turn our attention to Lawrence and Lorsch's work we shall discover that there are parallel problems with their conceptualizations.

The second major approach to understanding organizational structure was developed in parallel with the Aston work by Lawrence and Lorsch in 1967. Lawrence and Lorsch characterize organizations as large systems composed of numerous subsystems. The intent of their study was to develop a better understanding of the "internal functioning [of complex organizations] in relation to the demands of the external environment on the organization and the ability of the organization to cope effectively with these demands" (1967 p. 2). Lawrence and Lorsch argue that much of the internal functioning in which they are interested can be described in terms of differentiation and integration. They define differentiation "as the state of segmentation of the organizational system into subsystems, each of which tends to develop particular attributes in relation to the requirements posed by its relevant external environment" (1967 p. 4). Lawrence and Lorsch continue by noting that "Differentiation, as used here, includes the behavioral attributes of members of organizational subsystems; this represents a break with the classical definition of the term as simply the formal division of labour" (1967 p. 4). In contrast, "Integration is defined as the process of achieving unity of effort among the various subsystems in the accomplishment of the organizations' task" (1967 p. 4).

In their study, Lawrence and Lorsch (1967) considered structure at the subsystem level along with three other variables (members' interpersonal orientation, members' orientation toward time and members' orientation towards goals). They defined structure as "those aspects of behaviour in organizations subject to pre-existing programs and controls" (1967 p. 5). Structure was measured by way of "the span of supervisory control, number of levels to a supervisor shared with other subsystems, the specificity of review of subsystem performance, the frequency of review of subsystem performance, the specificity of review of individual performance, and the emphasis on formal rules and procedures" (1967 p. 16 -17).

Lawrence and Lorsch never actually use the term structure when describing the overall organization. Rather, they reserve it, in the above manner, to describe a specific aspect of an organizational subsystem. The Aston terms most closely related to Lawrence and Lorsch's use of structure would be standardization and formalization. Nonetheless, it does not distort Lawrence and Lorsch's work to assert that, in fact, their entire study is examining structure in the broadest sense and that differentiation and integration are the salient features of structure in their scheme.

Although there is not an exact correspondence, Lawrence and Lorsch's conceptualization of structure has certain parallelisms with that of the Aston researchers.

Specifically, differentiation is similar to the Aston specialization and configuration dimensions. It can also be argued that in Lawrence and Lorsch's terminology the Aston dimensions of standardization, formalization, and perhaps centralization, are at least analogous to integration -- inasmuch as they perform essentially the same function. The caveat is also true, however, for as with the Aston work, Lawrence and Lorsch's research presents difficulties for the researcher attempting to distinguish organizational structure from organizational control. Most fundamentally, it should be noted that their specialized definition of structure, quoted above, explicitly considers aspects of control as descriptors of structure.

With relatively minor variations, the Aston schema and the Lawrence and Lorsch conceptualization have come to be accepted as standards to use when discussing or measuring organizational structure. Indeed, a more recent review of research on structure (particularly in its relationship to technology) finds the basic notion of structure unproblematic (Fry 1982). Fry opines that "there is growing agreement, despite differences in operationalization, that complexity (including vertical and horizontal differentiation), formalization, and centralization (including hierarchy of authority and participation) are the major theoretical dimensions of structure ..." (1982 p. 539).

Unfortunately, and to conclude our discussion of structure, we have illustrated, that when one is attempting to distinguish between structure and control these dimensions are not helpful and, in actuality, they may merely confuse the issue. Formalization presents particular difficulties including as it does aspects of rules and procedures which, we shall see, more accurately are classified as aspects of control. We must conclude that issues of control are simply not distinguished from structure by researchers writing primarily on structure. In fact, the more fundamental distinctions are not attempted until one traces the literature which deals explicitly with organizational control. We will now turn our attention to that end.

Organizational Control

Researchers of organizational control can be generally divided into two schools. The first group, in agreement with researchers of organization structure, treats organizational control and organizational structure as equivalent concepts. For reasons discussed below, this group tends to focus on organizational power in research and discussion. The second group attempts to distinguish between structure and control and includes issues other than power in discussions of control.

Etzioni (1965), a member of the first camp, states the underlying issues in organizational control rather baldly:

> Most organizations most of the time cannot rely on most of their participants to carry out their assignments

> voluntarily, to have internalized their obligations. The participants need to be supervised, the supervisors themselves need supervision, and so on, all the way to the top of the organization. In this sense, the organizational structure is one of control, the hierarchy of control is the most central element of the organizational structure (p. 650).

There are two points in the above quotation. The first is that control mechanisms are invariably necessary in some form in organizations. Individuals will not normally behave in the desired manner without some inducement. Secondly, it is clear from the quotation that Etzioni sees organizational structure and organizational control as being intimately linked. Indeed, this association is so powerful in Etzioni's approach, that he uses the phrase (and titles his article) "Organizational Control Structure." He defines organizational control structure as, "a distribution of means used by an organization to elicit the performances it needs and to check whether the quantities and qualities of such performances are in accord with organizational specifications" (1965 p. 650).

If power is defined as the ability to induce people to behave in a manner in which they would not otherwise behave, then Etzioni's definition leads naturally to a consideration of that topic. That is, organizational structure and organizational control are both tools to induce people to behave differently than they normally would. Hence, by definition, they are aspects of power and power itself becomes the relevant research topic. Accordingly, after equating organizational structure and organizational control, Etzioni

(1965) focuses his discussion on power, particularly as it relates to employee selection, socialization and leadership.

According to Etzioni, power as exercised in an organization, can take three forms. Coercive power involves the use of physical means to attain desired ends. Utilitarian power involves the use of material means and identitive power involves the use of symbols to achieve desired ends. Etzioni argues that in most cultures the use of coercive power is more alienating than the use of utilitarian power which, in turn, is more alienating than identitive power. He asserts, further, that the different types of power are applied differentially throughout an organization with more alienating types of power being exercised in the lower ranks and less alienating being used in the higher ranks of an organization.

Etzioni elaborates on the relationship of employee selection and socialization to the three types of power. He argues that the principal source of power employed by an organization has implications for the effort which is required for selection and socialization - and (in the case of socialization) the likelihood of success. Coercive organizations, such as prisons, are very unselective, whereas utilitarian organizations are highly selective and identitive organizations vary with respect to their selectivity. However, identitive organizations are the most proficient at socializing new members into desired behavioral roles. According to Etzioni, selection, socialization and control, at least to a degree, are substitutes. That is, careful selection of organizational members reduces the need for socialization and control. Similarly, if members can be socialized to behave in certain ways, careful selection is not as crucial, nor are intense control mechanisms. Alternatively, adequate control measures imply that careful selection and socialization of members not be crucial. In the specific case of organizational leaders and managers, Etzioni suggests that power results either from the position of the individual, from his or her personal qualities or from some combination of both factors. Personal power is generally identitive and positional power is either coercive or utilitarian.

More recently, Ranson, Hinings and Greenwood (1980) have examined the issues of organizational control, power and organizational structure. After rejecting a dichotomy between the organizational framework and organizational interaction, or the formal and informal aspects of the organization, they argue that organizational structure should be conceived "as a complex medium of control which is continually produced and recreated in interaction and yet shapes that interaction: structures are constituted and constitutive" (p. 3). In the particular way that they have defined it, the process of structuring organizations involves an interplay between (a) interpretive schemes, (b) dependencies of power and domination and (c) contextual constraints.

Ranson, Hinings and Greenwood further assert that, "The analytical focus then becomes the relations of power which enable some organizational members to constitute and recreate organizational structures according to their provinces of meaning" (p. 7). In harmony with Hickson et al. (1971) and Hinings et al., (1974) and building on their overall theme of structure as constituted and constituting, power itself is seen as "the capacity to determine 'outcomes' within and for the organization, a capacity grounded in a differential access to material and structural resources" (p. 7). Ranson et al. proceed to make the point entirely explicit:

> Thus the structural framework is not some abstract chart but one of the crucial instruments by which groups perpetuate their power and control in organizations: groups struggle to constitute structures in order that they may become constituting (p. 8).

For Ranson, Hinings, and Greenwood then, structure is a means whereby power and control is achieved. In terms of semantics let us note that Ranson et al. (1980) have argued that organizational structure is a medium of control but have then reserved the phrases "organizational framework" and "organizational interactions" to discuss components of structure which are distinct from, but contribute to, the overarching concepts of control and structure.

Etzioni and Ranson, Hinings and Greenwood's treatment of power are not inconsistent. Etzioni presents a typology of power while Ranson et al. concentrate on the antecedents and consequences of power -- and find both embedded in the structure and control of organizations. Nonetheless, all three of Etzioni's power types can be present within Ranson, Hinings and Greenwood's theoretical framework.

Ouchi's treatment of control and structure presents a contrast to Etzioni (1965) and Ranson et al. (1980). In a series of articles in the mid to late 1970's Ouchi examined issues relating to organizational control and organizational structure in detail. He made three major contributions to the understanding of organizational control: (a) he characterized control as two separate functions (Ouchi and Maguire, 1975); (b) he offered a conceptual distinction between organizational control and organizational structure (Ouchi 1977); and (c) he expanded on Williamson's (1975) framework of market versus hierarchical control mechanisms with the identification of clan control mechanisms (Ouchi 1979, 1980). We shall discuss these three contributions in turn.

The starting point of Ouchi and Maguire's (1975) article is the distinction that many earlier studies made between

> control based on direct, personal surveillance (behavioral control) and control based on the measurement of outputs (output control). Most such studies have stated that the use of personal surveillance (behaviour control) is a substitute for management by files or records (output control). (p. 559)

Ouchi and Maguire (1975) hypothesized that rather than being substitutes, behavioral control mechanisms and output control mechanisms, in fact, are independent. Behavioral control will be used in situations where means-ends relationships are well understood while output control will be used in situations requiring evidence of performance for outside legitimation purposes. They conclude that

> The control mechanism in an organization is not a limited single-purpose invention. Output measures serve the control needs of the organization as a whole, while behaviour control serves the quite different needs of the individual manager, who has one subunit to oversee. (1975 p. 568)

Ouchi (1977) expanded and developed his exploration of control mechanisms in a subsequent article. In this second piece he attempted to make a three way distinction between (a) organizational structure, as measured by such variables as vertical and horizontal differentiation, centralization and formalization, (b) preconditions of control systems such as Perrow's (1965) task analyzability versus task exceptions and Thompson's (1967) technology types, and (c) the control system itself. Ouchi maintained that the control system "consists primarily of a process for monitoring and evaluating performance, while the preconditions specify the reliability and validity with which such comparisons can be made" (1977, p. 96-97). Ouchi (1977) echoed the theme of his earlier paper with Maguire (Ouchi and Maguire, 1975) by asserting that control must necessarily focus on behaviour or the outputs that result from behaviour. Simply put, there is nothing else to observe.

Ouchi (1977) offered a 2X2 matrix, derived from his discussion of preconditions to control, as a means to determine which control method is appropriate. The dimensions of the matrix are "knowledge of the transformation process" and "availability of output measures". According to Ouchi, high knowledge and high availability conditions are amenable to either output or behaviour control; high knowledge of the transformation process but low availability of output measures suggests the need for behaviour control; low knowledge of the transformation process coupled with high availability of output measures requires output control; while the final cell, low in both dimensions, requires control through rituals.

Ouchi (1977) made a commendable but convoluted attempt to empirically verify the distinctions that he raises conceptually. His results are at best ambiguous. He concludes that "the structure of an organization is not isomorphic with its control system. [But] structure is related to control" (1977, p. 110). If structure and control are equivalent concepts, as assumed by the researchers on structure, and by Etzioni (1965) and by Ranson et al. (1980), then one would not expect Ouchi's results.

Easily the most interesting of Ouchi's theories is his notion of clans as a distinct type of control (Ouchi 1979, 1980). The clan is presented as a third approach to organizational control in addition to Williamson's (1975) market control and hierarchical control. The essence of market control is that services, of any nature, are performed to satisfactory levels or the person or organization receiving the service will seek alternate sources for that service. However, if a task is very complex or ambiguous, it becomes inefficient to price each activity individually. In such a situation rules are instituted, supervisory personnel to enforce the rules are retained, and a hierarchy or bureaucracy is formed. In Ouchi's (1979, 1980) schema, clans are instituted when the degree of ambiguity raises still higher, to the point that it is unclear what the rules of the organization should be. The clan depends on thorough socialization of its members to achieve goal congruence. As well as being difficult to formulate, an extensive system of rules, or a tight pricing system becomes redundant in the clan organization as all members are explicitly (and truly) working with the good of the entire organization in mind.

We can equate market, bureaucracies and clans with Ouchi's (1977) earlier terminology. Specifically, markets are a form of output control and bureaucracies and clans both tend to be forms of behavioral control. Furthermore, it does not do violence to either writer to draw parallels between Ouchi (1979, 1980) and Etzioni (1965). Both market control and bureaucracies depend, in Etzioni's terms, on utilitarian power, although within a bureaucracy provision for discipline if rules are broken (i.e. coercive power) may also be present. The clan type organization, with its dependence on socialization of its members, in contrast, relies primarily on identitive power.

Hill (1988) presents a more recent treatment of structure and control which contrasts with Ouchi's (1977) distinction between the concepts. Hill (1988) proceeds by identifying, from the literature, three organizational configurations based on varying levels of the three control types which he empirically tests. These types are the well known multidivisional or M type, the holding company or H type and third, what he refers to as the centralized multidivisional or the CM type. In essence, Hill brings us full circle, equating control mechanisms and organizational structure so closely that the two cannot be meaningfully separated.

Daft and Macintosh (1984) take a different tack from any of the above writers in their attempt to understand managerial control. They conceptualize control "as a three stage cycle: (a) planning a target or standard of performance, (b) monitoring or measuring activities designed to reach that target, and (c) implementing corrections if targets or standards are not being achieved" (p. 44). Managers accomplish these ends in six ways: (a) strategic planning; (b) long range planning; (c) budget; (d) performance appraisal; (e) policies and procedures; and (f) statistical reports. Daft and Macintosh (1984) suggest that the first two categories, the strategic plan and the long range plan, represent the realm of upper management and apply to control of the organization as a whole. In contrast, the remaining four categories are used more by middle management and apply to the control needs of the individual department.

As we conclude our review of research on organizational control we are left with differing concepts of control and differing foci of research. In terms of our original research question we likewise have differing formulations of structure and control and differing understandings of the relationship between the two concepts. To summarize, Etzioni (1965) and Ranson et al. (1980) treat structure and control as equivalent concepts driven by power relationships. Ouchi (1975, 1977, 1979, 1980) distinguishes between behavioral control and output control, and between structure and control and extends Williamson's work with a discussion of markets, bureaucracies and clans. Hill (1988) uses control types as the basis of a typology of organizations. Finally, Daft and Macintosh (1984), in sharp distinction to the other writers considered, discuss control in terms of planning, monitoring and implementing corrections.

Toward a Resolution

When considering organizational structure versus organizational control, there are a limited number of resolutions to the apparent conflict in the literature. Specifically: (a) control and structure are directly equivalent concepts, implying that one or the other term is redundant; (b) control is one aspect of structure; (c) structure is one aspect of control; (d) structure and control are two distinct, completely independent concepts; or (e) control and structure are two distinct but interdependent concepts.

It takes only a casual reading of the literature to lead us to reject both point (a), that control and structure are directly equivalent and point (d) that structure and control are two distinct, completely independent concepts. Even those writers who appear to be arguing for the equivalency of the concepts, in fact, usually are saying that one is a component of the other as do Ranson et al. In the second instance, while it is possible to discuss structure independently of control it seems to be clearly not possible to discuss control without at least passing reference to structure. Even in the case of discussing structure independently of control, to the degree that Ranson, Hinings and Greenwood are correct, and structure should be understood as a means of establishing and maintaining control and power, it is unclear what end is served by studying structure in isolation.

In resolving which of the remaining three formulations is most helpful we concur with Ouchi's (1977) position that there is a meaningful and useful distinction to be made between structure and control. Further, we need to acknowledge that, in part, our confusion stems from a lack of rigor in the use of language. For present purposes structure will be defined narrowly as what Ranson et al. (1980) refer to as the "structural framework". The structural framework can best be captured by way of (a) roles and relationships within the organization, (b) centralization and the (c) Aston measure of configuration. This approach corresponds with Daft's (1992) definition. Sharply circumscribing our understanding of structure in this fashion prevents an unhelpful definitional linkage of structure and control. The resulting clear distinction between the two concepts will allow the researcher to precisely and meaningfully explore the theoretical relationship between them.

When attempting to resolve difficulties within the stream of research relating exclusively to control, we must concede that although the writers reviewed are all examining organizational control in the broadest sense, on an individual level they are discussing very different aspects of control. However, all of these aspects are necessary for a complete understanding of control. We cannot, therefore, simply dismiss one or another approach to control out of hand without thereby diminishing our understanding of the phenomenon. By the same token, within a common framework we must identify precisely what aspect of control the various researchers are considering to enable us to understand the true complexity of the concept. The common framework for analysis is provided by an inclusive definition of control: *control consists of all aspects of the processes whereby it is assured that strategic decisions are executed.* When interpreting this definition, it should be noted that "strategic decisions" are considered to be those decisions that drive and shape the organization. As such, they lead to, and definitionally subsume, market, financial and operating decisions.

It is helpful, additionally, when the term "control" is considered, to distinguish between (a) the basis of control; (b) the focus of control; and (c) the tools of control. The basis of control will be the various types of power, particularly, for reasons presented in chapter three, coercive and identitive, as discussed in Etzioni (1965). The focus of control will be on either behaviour or the outputs of behaviour as per Ouchi (1977). A non-exhaustive list of the tools of control is presented in Daft and Macintosh (1985) and includes such items as strategic planning, long range planning, budgets, performance appraisals, policies and procedures and statistical reports. In combination these three factors, basis, focus and tools, are a result of the construct we call "control". The relevant dimension of control is intensity. We define intensity as the extent to which all aspects of control are utilized. That is, the more the various aspects of control are utilized, the more intense the control will be.

Theoretical Implications

We would postulate that the intensity of control that an organization uses will result in different bases, different foci, and different tools of control being utilized by that organization. Further, there will be significant, but not perfect, correlations between intensity of control and organization structure, when structure is understood in the sense of structural framework or configuration.

Driving the patterns which we expect to see is an underlying framework of common causality. Specifically, we maintain that both the intensity of control and the structural framework are influenced and caused by interpretive schemes (Ranson et al. 1980) and contextual influences such as technology, (Woodward, 1965) size (Pugh et al., 1968) and environmental uncertainty.

The choice of environmental uncertainty, technology and organizational size as contributing causes of organizational structure and control systems is derived from a distillation of thirty years of organizational study. There is broad agreement amongst researchers in organizational theory that any discussion of the causes of organization structure must, minimally, consider those three issues. For example, Miller and Dröge (1986), after a brief review, provide a convincing rationale for the inclusion of all three variables in an examination of structure, and conclude, "It appears then that any investigation of the determinants of structure should include the simultaneous analysis of size, technology and [environmental] uncertainty" (p. 544). They note that the effects of technology are the most problematic in the literature but argue that, "although technology does not seem to have a consistently direct impact on structure, the earlier, sporadically significant results suggest that we incorporate it into any model predicting structure" (1986, p. 544). Figure 2.1 illustrates the proposed relationship between structure and control within the traditional causal framework implied by contingency theory.

It should be reiterated at this point that the purpose of the present study is multifold. Working within a contingency framework the thesis proposes a model which (a) examines and suggests a resolution to problems with traditional understandings of structure and control; (b) incorporates the concept of interpretive schemes as an additional causal variable underlying structure and control; and (c) considers the overall outcome of the contingencies, including interpretive schemes, and the resulting structure and control on marketing effectiveness.

The Role of Interpretive Schemes

We have discussed the rationale for inclusion of the contingencies above. The concept of interpretive schemes, the additional variable considered within the contingency framework developed, comes principally from Ranson, Hinings and Greenwood (1980). They define interpretive schemes and explain the relationship of interpretive schemes to structure as follows:

> Interpretive schemes ... are intrinsically related to the creation of provinces of meaning. They refer to the indispensable cognitive schema that map our experience of the world, identifying its constituents and relevances and how we are going to understand them. ... It is this shared background of mutual understandings that constitutes, as Brown (1978: 374) argued, "the

> 'agreement' between members that enables the orderly production" of roles and rules. (p. 5)

Hinings and Greenwood (1988) elaborate on the nature of interpretive schemes. They argue that

> interpretive schemes set 'frames' for (a) *the appropriate domain of operations*, i.e. the broad nature of organizational purposes or mission, (b) the appropriate *principles of organizing*, and (c) the *criteria of evaluation* to be used *within* the organization for assessment of organizational performance. (p 19) [Emphasis in the original.]

If Ranson, Hinings and Greenwood's (1980), and Hinings and Greenwood's (1988) theoretical formulation is correct then clearly interpretive schemes becomes an extremely important concept in understanding organizational structure and control. Their work implies that any significant alteration in the shared interpretive schemes of an organization's members will necessarily have an effect on the structure and control processes of that organization. Further, that change will cause a shift in the way the organization is structured, from one configuration, associated with the original interpretive scheme, to a second configuration, associated with the new interpretive scheme.

Interpretive schemes are an important additional variable in attempts to understand the causes of structure and control in that they bring people, in the form of their belief systems, back into organizations. Traditional contingency theory, with its focus on environmental variables (broadly speaking) has tended to reduce the role of individuals and organizational designers into a reactionary one. That is, once the contingencies are identified and measured the manager simply designs the organization accordingly. Child (1972) reacts strongly to this viewpoint, but the addition of interpretive schemes provides a solid and defensible theoretical argument that the contingencies are not alone in shaping organizations and that the deeply held belief systems of the individuals within the organization must also be considered. Figure 2.2 illustrates the relationships and causal framework implied by an understanding of interpretive schemes.

In this present study particular attention was paid to the effects of a specific interpretive scheme, market orientation, on the structure and control processes of business units. Market orientation was chosen as an appropriate interpretive scheme because it had behind it a relatively long history of theoretical discussion and explication. There, no doubt, was a large number of alternative interpretive schemes possible to examine but none of them had the same wealth of theoretical development that market orientation did. Accordingly, the thesis focused on market orientation as the interpretive scheme of interest.

The established literature examining market orientation notwithstanding, market orientation is not normally conceptualized as an interpretive scheme. The rationale for such a conceptualization is now presented.

Market Orientation as an Interpretive Scheme

Market orientation, or more familiarly, the marketing concept, has come to be known as primarily a responsibility and phenomenon of an organization's marketing department. It is proposed that a broader and more comprehensive approach to understanding the concept, suggesting that defining market orientation as a particular interpretive scheme will result in a better understanding of the notion. More precisely, it is argued that an organization which truly embraces a market orientation will exhibit a distinct and identifiable profile.

Rather than representing a radical redefinition, this position in fact, is a call to a return to original definitions and understandings of the marketing concept. Since the late 1950's various authors have defined the marketing concept. The following are a few examples:

> The central meaning of the marketing concept to the decision structure of a business is that the major purpose of the venture is taken from the need to solve some problem in the outer environment - some betterment for the customer - and all subsidiary decisions dealing with the acquisition and allocation of resources within the business are bent to that objective. (McKitterick, 1957: 75)
>
> The marketing concept is a corporate state of mind that insists on the integration and coordination of all the marketing functions which, in turn, are melded with other corporate functions, for the basic objective of producing maximum long-range corporate profits. (Felton, 1959: 55)
>
> The marketing concept means that an organization aims all its efforts at satisfying its customers - at a profit. (McCarthy and Perreault, 1984: 35)

The different definitions of the marketing concept have several components in common:

1.An organizational phenomenon: Almost all authors have defined the concept, either explicitly or implicitly, as an organizational phenomenon. They view it as a characteristic of the whole organization and not any specific part of it. McKitterick (1957) defines the concept in terms of its relevance to the whole business. Felton (1959) defines it as a "corporate state of mind" and McCarthy and Perreault (1984) define it in terms of the focus of organizational efforts. What these definitions imply is that the marketing concept is much more encompassing than the marketing function. It impacts every aspect of the organization and not just the marketing group.

2.Focus on integration: Most definitions suggest the importance of the integration of all organizational resources and activities towards one objective: satisfaction of consumer needs. Almost all authors emphasize the need for integration of effort both within and outside the marketing function to achieve this goal.

3.Customer focus: Every definition of the marketing concept emphasizes the need to understand consumer needs and wants. The primacy of the concept lies in its focus on customer needs as the starting point for organizational decision making. Products and services are designed and produced based on the needs and desires identified in the marketplace. Practitioners and academics alike have captured the idea of customer focus quite completely.

Based on an examination of the original definitions market orientation should be understood as an organizational phenomenon and not simply an aspect of the marketing function. The marketing concept is a unique way of interpreting the world. As such it is a frame of reference for organizational members: it is a complete and coherent interpretive scheme.

There have been two more recent treatments of market orientation which deserve mention, although the present study differs from each in quite significant ways. The first discussion is a comprehensive framework for understanding marketing orientation developed by Kohli and Jawarski (1990). These authors have made a distinction between the marketing concept and market orientation. They suggest that the marketing concept reflects a particular business philosophy and that market orientation is the implementation of that philosophy. Kohli and Jawarski then proceed to define market orientation in strict behavioral terms.

> Market orientation is the organizationwide *generation* of market intelligence pertaining to current and future customer needs, *dissemination* of the intelligence across departments, and organizationwide *responsiveness* to it. (p 6, emphasis in the original.)

After developing the above definition, Kohli and Jawarski proceed to put forward a lengthy list of propositions relating to antecedents, moderators and consequences of market orientation, or perhaps more helpfully, market oriented activity. It is curious to note that after distinguishing the marketing concept as the philosophy underlying market oriented activity, Kohli and Jawarski never mention the term again. Indeed, from the framework they present, one infers that the philosophy which they label the marketing concept is not necessary for market oriented activity, as they have not included it as an antecedent to market orientation.

In contrast to Kohli and Jawarski's (1990) framework, this present work treats the marketing concept and market orientation as interchangeable terms depicting a particular interpretive scheme and then focuses on the organizational outcomes of that interpretive scheme.

A second distinction between this study and Kohli and Jawarski's (1990) framework is in the role accorded to the organization. In Kohli and Jawarski's (1990) schema, organizational structure is an antecedent to market orientation. Given their behavioral definition of market orientation this approach is actually quite reasonable. However, when defined as an interpretive scheme, as in the present study, then clearly market orientation is a cause and not an outcome of organizational structure.

Narver and Slater (1990) subsequent to Kohli and Jawarski's (1990) work (but sometime after the instrument in the present study was developed) published a scale to measure market orientation. They conclude that market orientation is a one dimensional construct that has three components: customer orientation; competitor orientation; and inter-functional coordination. Their scale reflects Kohli and

Jawarski's (1990) behavioral understanding of market orientation and as such the same observations can be made about their work as have been discussed above relating to Kohli and Jawarski (1990). Additionally, one finds it extremely difficult on a conceptual level to justify including the notion of competitor orientation as an integral component of market orientation. A market, by accepted common definition, is a collection of customers, actual or potential. Although it is undoubtedly important to be aware of competitors' activities and strategies, arguing that competitive orientation *per se*, in the form of monitoring and organizational response, is a core component of market orientation seems to only confuse the issue.

Theoretical Implications of Marketing Orientation

A reasonable possible outcome to examine within the context of a study considering marketing orientation is marketing effectiveness. Although it may be assumed that market orientation is thought eventually to lead to overall organizational effectiveness, the focus of the definitions cited above is clearly on marketing effectiveness. Indeed, organizational effectiveness *per se* is either not mentioned (McKitterick, 1957) or presented rather as an afterthought (Felton, 1959; McCarthy and Perreault, 1984). In keeping with the thrust of this literature, the present study considers marketing effectiveness as the outcome of particular interest of marketing orientation and its resulting structure and control.

Within the marketing literature it is a usually unstated assumption that market orientation leads to marketing effectiveness. It is the contention of the present study that market orientation will, in fact, lead to a particular structure and control system which will, in turn, lead to marketing effectiveness. Figure 2.3 illustrates this relationship and represents the complete theoretical framework of this thesis. Figure 2.3 represents an explicit causal model which can be directly tested using structured equation modelling. The figure is interpreted as follows.

The traditional contingencies of organizational theory, environmental uncertainty, size and technology, as well as interpretive schemes, are depicted as being the underlying causes of structure and control. Structure is depicted as an unobserved construct which is indicated by configuration and centralization. Similarly, control is an unobserved construct. The intensity of control will cause certain tools of control to be used, a particular focus, and particular bases to be utilized. Tools, focus and bases of control are themselves latent constructs which are indicated by various measures. [The measures used are discussed in detail in Chapter 3.]

Structure and control, in turn, cause marketing effectiveness. Marketing effectiveness is also an unobserved construct which is indicated by various observed, measured variables.

Specific propositions can be made about the nature of the relationships discussed above and diagrammed in Figure 2.3. Market orientation will affect structure in particular ways. Specifically, market orientation brings with it a "problem solving for the benefit of the custumer" attitude. Such an approach implies that decision making power must be as close as possible to the customer. One would expect, therefore that:

> **P1:** Market oriented firms will be less centralized than non market oriented firms.

Given that market orientation focuses on desirable outcomes for client or customer, control systems will be put into place to ensure that those outcomes actually come to pass.

> **P2:** Market oriented firms will employ more intense control systems than will non market oriented firms.

It is argued above that market orientation will result in higher levels of marketing effectiveness when appropriate structures and control systems are employed.

> **P3:** The structure resulting from market orientation, in turn, will result in marketing effectiveness.

> **P4:** The control systems resulting from market orientation, in turn, will result in marketing effectiveness.

Other Issues

Interpretive schemes can be related to organizational structure and control process in two alternate ways. The first possibility is that the interpretive scheme is simply another contingency impinging on the organization and influencing structure and control in its turn. Figure 2.3 illustrates such a relationship. The second conceptualization, and the understanding put forward by Ranson, Hinings and Greenwood (1980), is that interpretive schemes in fact interact with, and shape perceptions of, the traditional contingencies.

The most straightforward way to test for the interactions expected by Hinings and Greenwood is through the use of multiple regression. With organizational control and structure as the dependent variables (i.e. two regressions) and environmental uncertainty, technology, size and market orientation as the independent variables, the following interactions would be expected.

P5: with organizational control as the dependent variable market orientation will interact with:

P5a: environmental uncertainty;

P5b: technology; and

P5c: size.

P6: with organizational structure as the dependent variable market orientation will interact with:

P6a: environmental uncertainty;

P6b: technology;

P6c: size.1

Summary

This chapter has examined several of the most influential initial statements of the nature and relationship of structure and control (Pugh et al., 1968; Lawrence and Lorsch, 1967). The chapter proposes an empirically testable resolution to the theoretical disagreements which are inherent in these early statements and which have continued to be reflected in more recent discussions of structure and control (e.g. Hill, 1988). The concept of interpretive schemes, in particular the interpretive scheme, market orientation, is considered as an additional important underlying cause of structure and control. It is argued that the interpretive scheme (Ranson et al. 1980), market orientation, will lead to a particular structure and control system and that the resulting structure and control system, in turn, will lead to marketing effectiveness. A large causal model is presented which summarizes the expected relationships.

Chapter 3 discusses the measures used in the study. Chapter 4 details exploratory adjustments made to the proposed structural model while Chapter 5 discusses subsequent confirmatory testing of the structural model. Chapter 6 considers the implications of the findings and Chapter 7 presents an overall summary and conclusions of the study. We now turn our attention to a detailed discussion of the development of the measures used in this study.

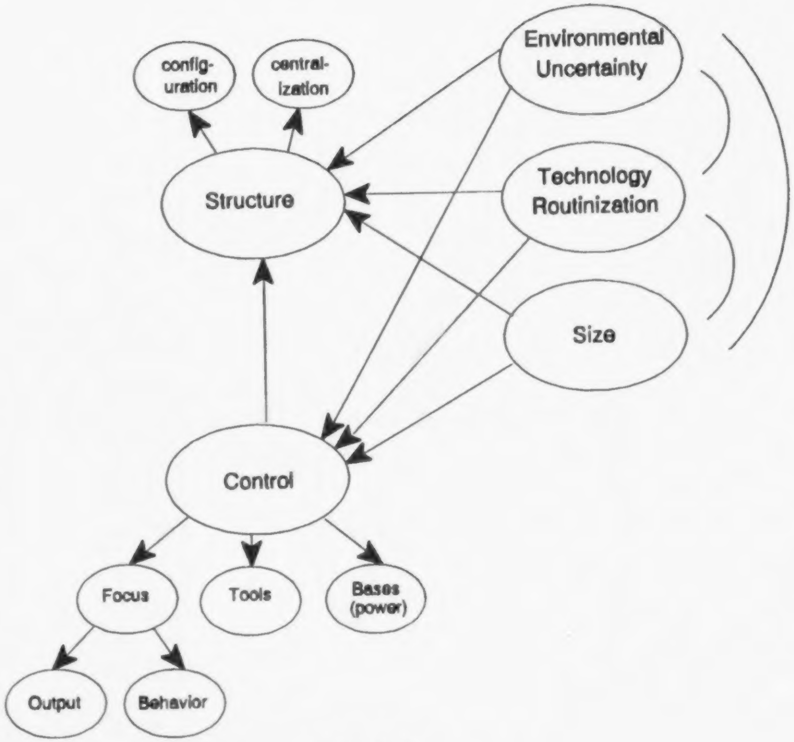

config-
uration
central-
ization
Structure
Environmental
Uncertainty
Technology
Routinization
Size
Control
Focus
Tools
Bases
(power)
Output
Behavior

Figure 2.1 The Initial Contingency Model

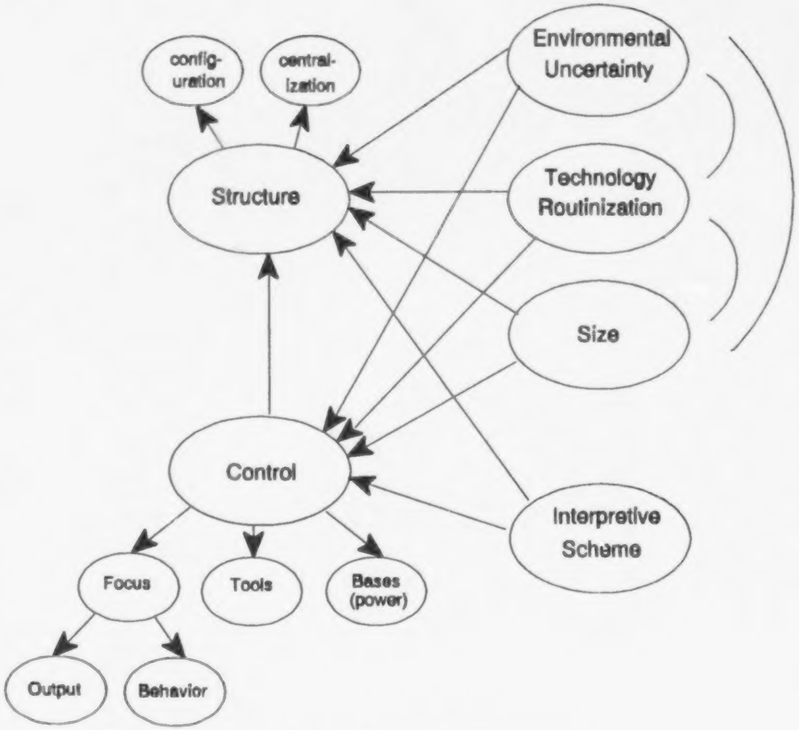
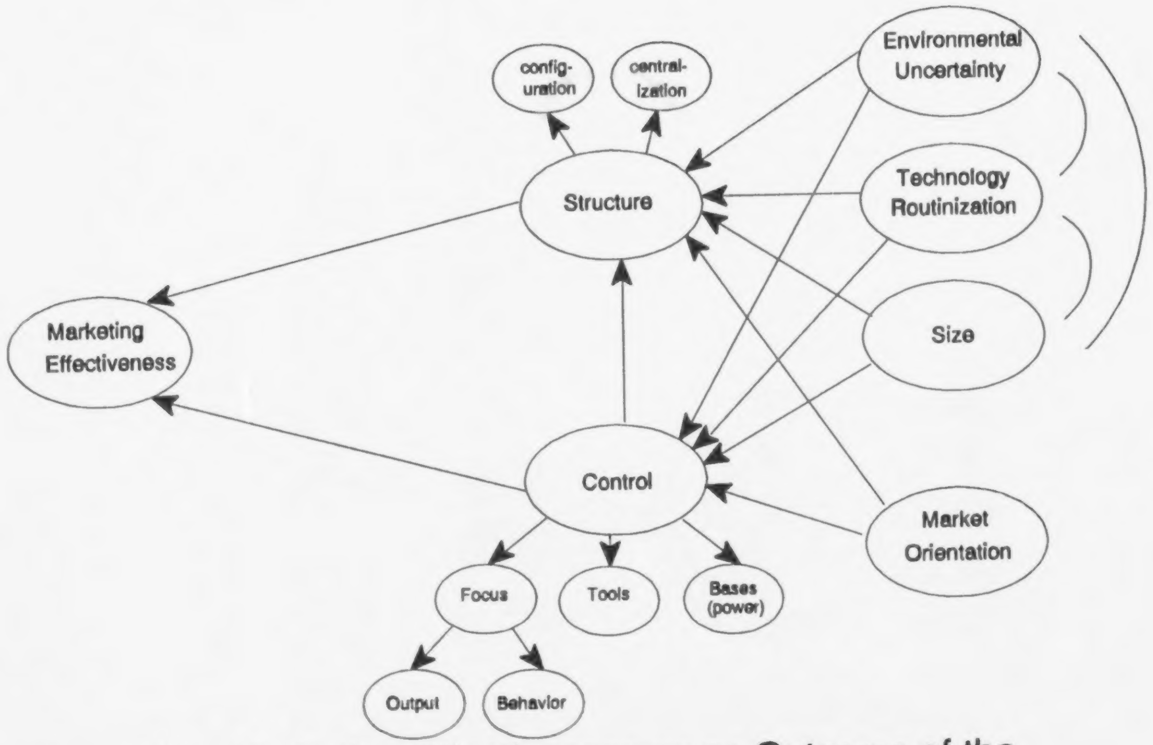

config-
uration
central-
ization
Structure
Environmental
Uncertainty
Technology
Routinization
Size
Interpretive
Scheme
Control
Focus
Tools
Bases
(power)
Output
Behavior

Figure 2.2 Interpretive Schemes as a Contingency



config-uration
central-ization
Environmental Uncertainty
Technology Routinization
Size
Market Orientation
Structure
Control
Marketing Effectiveness
Focus
Tools
Bases (power)
Output
Behavior

Figure 2.3 Marketing Effectiveness as an Outcome of the Contingencies and Structure and Control

CHAPTER 3: METHODOLOGY

Overview

To test the theoretical issues explored in the previous chapter, a mail survey of 514 partners of 200 offices of 22 chartered accounting firms in 123 Canadian cities was conducted. Administration of the survey followed guidelines developed by Dillman (1978).

Data analysis followed the process diagrammed in Figure 3.1. The initial dataset was divided into two groups (see below for details) one which contained 89 accounting offices and one which contained 137 offices. The smaller database was used for scale development and exploratory study whereas the larger was reserved for confirmation of the exploratory conclusions.

Scale development was accomplished in a two-stage process. Initially, scales were tested using factor analysis and alpha scores. Final scale refinement was accomplished using structured equation modelling by way of the computer program LISREL. The refined measures were then used as the basis for initial testing and modification of the structural model proposed in chapter 2. A measurement model was developed to give a baseline fit against which to compare the fit of the modified structural model. Given the resulting satisfactory comparative fit, the acceptability of the modified structural model was confirmed on the second database of 137 offices. Finally, further analysis was undertaken outside of the structural equation framework, using multiple regression.

This present chapter reports the procedures followed for data collection and also reports scale development and refinement. Chapter 4 discusses details and results of the exploratory work and chapter 5 reports the result of the confirmatory analysis and the multiple regression.

Data Collection

Sample

The key underlying issue being examined in the thesis, the relationship of market orientation to organizational structure and control, implied the need for a sample of organizations which varied on both relevant constructs. Accounting firms suggested themselves as likely candidates given recent moves to more aggressive marketing approaches within the industry. Further, the ongoing research of the Department of Organizational Analysis, (Greenwood, Hinings and Brown, 1990) supported the notion that accounting firms vary both in terms of market orientation and structure. The prior research also indicated that the high degree of autonomy given to each local accounting firm office would make the local office an appropriate unit of analysis. It also suggested that the issue of marketing was very current in accounting offices but was being approached in a variety of ways.

Within the broader spectrum of accounting firms, medium sized chartered accounting firms were studied. Medium sized firms were defined as those listed as the top seven to thirty in The Bottom Line, a monthly accounting trade publication. Figures from April 1989 and April 1990 were used: if a firm appeared in the rank seven to thirty range (rankings were based on revenues) in one of those years it was included in the sample.

Medium sized firms were chosen in preference to large or very small accounting firms for several reasons. Small firms were excluded because previous fieldwork, undertaken by the Department of Organizational Analysis, suggested that very little variation on market orientation and in marketing activities would be found in the small firms. Inclusion of those firms, therefore, would only weaken the observed effect of the relationship of interest.

Large firms were excluded primarily because the Department of Organizational Analysis was involved in ongoing in-house research with several of these firms. It was feared that their inclusion in a second study would jeopardize the results of the first. Appendix 13 lists the firms included in the study.

Within each local office partners of the firm were considered to be the most appropriate source of information about the market orientation and marketing efforts of the office. This decision was based on prior fieldwork which identified partners as the prime contributors and decision makers in marketing areas. The major part of the questionnaire was concerned with data on organizational structure and control which were objective in nature.

This study restricted itself to offices located in English Canada (i.e. offices outside the province of Quebec). Quebec was not included in the study because it was felt that a French version of the survey instrument would be necessary. At the time the study was undertaken the Province of Quebec had just concluded a long and frustrating round of negotiations with the other nine Canadian provinces dealing in part with language issues. It was concluded that an English language survey, originating from Alberta would simply not elicit a response from Francophone accounting partners. Indeed, there was considerable doubt that a French version of the questionnaire would fare much better. In any event, preparing and subsequently analyzing a French version of the questionnaire was considered too problematic to be of benefit.

Compilation of the Mailing List

The mailing list used in the study was derived from the Directory of the Canadian Institute of Chartered Accountants. The 1989 edition was the most recent and was used for this study. The directory is organized alphabetically by city and firm. It includes the address of each local chartered accounting office and a list of partners associated with that office. All offices of the firms defined as medium sized for the purpose of this study were included in the mailing list. If an office had four partners or fewer, all partners were included on the mail list. If the office had more than four partners a subset of four partners was chosen. The subset was selected by choosing four consecutive names beginning with a randomly chosen name. To ensure that the first name was random a random number table was consulted each time an office with more than four partners was encountered. Consecutive names were chosen because the listing of partners was alphabetical rather than by length of tenure or area of responsibility (for example). Therefore, using consecutive names should not introduce any particular sampling bias.

Initial Sample Characteristics

The result of the mail list compilation was a sample of 514 partners representing 200 offices of 22 firms in 123 cities in Canada. The mean number of surveyed partners per local office, then, was 2.6. The actual total number of partners per local office ranged from 1 to 29. The mean number of actual partners per local office was 5.3. It should be noted that it is a characteristic of this study that the universe of medium sized Canadian chartered accounting offices, the unit of analysis, was surveyed, while a subset of actual partners was surveyed.

Rationale

A mail survey is considered the appropriate data collection method when a situation is fairly well understood and a large number of responses are desired for theory testing. A mail survey also has the advantages of low cost per completed response and a relatively high degree of accuracy when compared to, say, telephone surveys (Aaker and Day, 1983).

Although there has been little published research on accounting firms and accounting offices *per se*, this study was able to benefit from the extensive prior field work of the Department of Organizational Analysis at the University of Alberta. Over a period of several years the department has conducted over 300 in-depth interviews with accounting partners and managers at both the local office and national level. The result is a substantial collection of field notes, which were made available to this researcher, and a rich understanding of the distinctiveness of the managerial issues facing accounting firms and offices. (See Greenwood, Hinings and Brown, 1990; Hinings, Brown and Greenwood, 1991.)

The consequence of this foundational work was a high degree of confidence that the theoretical issues under consideration were of relevance to the accounting industry and could be addressed in a systematic way via a mail survey instrument.

Survey Administration

To the greatest degree possible the questionnaire was administered following procedures outlined by Dillman (1978). The main deviations from Dillman were that (1) addresses were printed on mailing labels rather than directly on the envelopes, due to lack of access to proper equipment;(2) a post card follow-up was not used due to budget restraints; (3) the two follow-up mailings with duplicate questionnaires were mailed approximately one week later than Dillman suggests in recognition of the greater geographical distance, and slower rates, that the Canadian mail travels; and (4) the final mailing was sent regular post rather than registered mail due to budget restraints. In more detail, the questionnaire was administered as follows.

An initial wave of 514 questionnaires, representing 200 offices, was mailed July 17, 1990. Each questionnaire was stamped in the top right corner with an identifying number beginning at 1001. The number corresponded to a micro computer based database of addresses. As questionnaires were returned the database was updated to indicate a completed survey (or undeliverable) and it was noted if a summary of the results was requested. The initial mailing resulted in 113 surveys returned completed, 14 surveys returned as undeliverable and 66 requests for summaries. Nine people returned the survey declining to participate for various reasons. The individual response rate to the first mailing was 22 percent of the total mailing and 22.6 percent of those delivered. Of the 200 offices surveyed, one or more questionnaires were received from 83 offices. At the office level, therefore, the initial response rate was 41 percent.

A second wave of 378 questionnaires was mailed August 14, 1990 to non-respondents to that date. The second questionnaires were also stamped with an identifying number in the top right corner. For the second mailing, however, the numbers began with 2001, with the remaining digits corresponding to the identifying number of the first mailing. (eg. the person who received survey 1224 in the first mailing would receive 2224 in the second.) The second mailing resulted in 69 surveys, representing 60 offices of which 35 were unique, returned completed, 2 returned as undeliverable and 35 requests for a summary of the results. The individual response rate to the second mailing was 18 percent of the total second mailing. It brought the overall individual response to 35.4 percent of the total sample (514) and 36.5 percent of those questionnaires actually delivered (498). The second mailing brought the overall number of offices to 118 or 59 percent of those originally surveyed.

A third, and final, mailing was conducted September 14, 1990. The questionnaires were again stamped with an identifying number, in this instance beginning with 3001. The third mailing consisted of 307 questionnaires and resulted in 44 returned completed from 36 offices, 4 returned as undeliverable, and 31 requests for a summary of the results. The individual response rate of the third mailing was 14 percent. It raised the overall individual response rate to 44 percent of the total sample (514) and 46 percent of the sample actually delivered (494 assuming that none of the questionnaires returned in the second and third mailings were ever actually delivered in the first and second mailings). In total 27 percent of the total sample (58 percent of the total respondents) requested a summary of the results. Fourteen additional unique offices responded to the third mailing bringing the total number of offices to 137 or 69 percent of the original 200. The mean number of surveys returned per office was 1.6.

When the surveys were returned the results were coded and entered into a mainframe computer database. To ensure confidentiality, a second number was stamped on the questionnaire when it was received which was subsequently used for all identification purposes. The original number was not entered into the mainframe database of results and the second number was not entered into the micro computer database of names and addresses of the respondents. In this fashion the completed questionnaire was separated from the name of the person who completed it.

Development of the Instrument

The theoretical constructs under consideration included the dependent variables, configuration, centralization, tools of control, focus of control, bases of control, and marketing effectiveness and the independent variables, environmental uncertainty, organizational size, technology, and market orientation.

As an initial guiding principle it was decided that whenever possible existing measures of the theoretical constructs would be used. The primary reason for this approach is that the use of existing measures allows inter study comparisons, in the form of meta-analysis, to be made more easily and gives a more realistic opportunity for the cumulation of knowledge. If variables are measured in similar ways between studies, differences and similarities in findings can be more confidently ascribed to the respective treatments. However, in cases where measures change between studies it is difficult to separate differences in findings from differences in measuring instruments. While it is not the intent of this present work to make inter-study comparisons, future researchers may wish to do so.

It should be noted that, the value of using existing scales notwithstanding, these measures were not adopted uncritically. The reliability of each scale was checked and in several instances, discussed below, individual scale items were dropped.

Despite the goal of using established scales whenever possible, it was necessary to develop original measures to capture three of the constructs: focus of control; market orientation; and marketing activity. The measures developed specifically for this study were formulated with frequent reference to experts in the accounting industry. Early in the development process an interview was conducted with an executive of the Edmonton Association for the Marketing of Professional Services to establish issues of general interest to the marketing of professional services. Additionally, two accounting partners, responsible for marketing with Price Waterhouse, were contacted for input. Subsequently, the entire instrument was given to ten partners with a request for feedback as to its appropriateness to the accounting industry. Four of the partners returned the instrument with comments and three others indicated via telephone that they had no reservations about its contents.

The following general approach was adopted for refinement of the measures, development of the measurement model, and adjustments to the structural model. As noted above, the response of 226 individuals represented 137 offices. Given that the office was the unit of analysis for this study, the responses from duplicate offices represented an additional database. Duplicate offices were assigned either to the main database of 137 or to the second database of 89 on a random basis. The second database was then used for all measurement refinement and for exploratory adjustments to the structural model. The main database of 137 was used only to test the model refined in the smaller database.

The new scales were developed following a procedure suggested by Churchill (1979). A list of questions addressing the specific construct was generated. This list always included more questions than strictly required thereby allowing a certain degree of flexibility in purifying the scale. Scale refinement was accomplished on the subset of 89 duplicate offices. The expanded scale was factor analyzed using maximum likelihood within SPSSx. The first factor, which normally contained 3 to 5 items, invariably captured the essence of the construct being measured. Cronbach's alpha was then calculated for the items in the factor. In most cases this resulted in an alpha level of .6 to .8. In two instances an alpha below .6 occurred (behavioral control, alpha = .50; output control, alpha = .59). Nunnally (1967) suggests that while for decision making alpha scores of .9 or greater are desirable, for theory testing and related work alpha scores greater than .5 are quite adequate. In the second edition of that same reference work (Nunnally, 1978) he raises the suggestion for the latter standard to .7 or greater. All of the measures in this study meet Nunnally's original mark and most of them meet the more rigid level. Given that theory testing is precisely the purpose of this present study the alphas obtained were deemed satisfactory. The alpha scores associated with each scale are reported below and summarized in Table 3.1.

As shown diagrammatically in Figure 3.1, within the context of the present study, the scale purification, detailed above, was only considered a first step in arriving at the final satisfactory measures used in this study. The main purpose of the factor analysis was to establish the unidimensionality of the individual scales and to confirm that various individual measures, intended to measure the same latent construct, were in fact associated with the same underlying factor. The alphas were calculated as a preliminary measure of reliability. As explained below, the final measurement refinement was accomplished in a second step utilizing LISREL.

The technical details of the factor analysis stage are as follows. Factors were extracted using maximum likelihood. Maximum likelihood was chosen as it results in the greatest likelihood of reconstructing the original observed covariance matrix (Kim and Mueller, 1978). As theory testing is essentially attempting to reconstruct observed relationships (i.e. the covariance matrix), maximum likelihood is frequently cited as the most appropriate estimation method for studies such as the present (Anderson and Gerbing, 1988).

After the initial factors were extracted and the measures were identified as unidimensional (or not) and the measures associated with each factor noted, no further use was made of the factor information. Although factor loadings are reported in the appendices for the reader's interest, those loadings were not used as scale weights nor were they entered into the LISREL model as coefficients. Rather, as elaborated below, the LISREL program itself calculated the appropriate coefficients for the various individual measures. The Cronbach's alphas determined for the factors, to measure their reliability when considered as scales, were calculated using equal weights on each scale item.

Unrotated factors were used in this analysis. The rationale for this approach is that rotation is used merely as an aid to interpretation. In this preliminary analysis the goal was to establish unidimensionality and reliability. With the exception of market orientation, which is discussed in detail below, the interpretation of the factors was straightforward.

Table 3.1
Summary of Scale Properties

Name	# of Items	Alpha	# of Factors
Power	4	.63	1
Behaviour Control	4	.50	1
Output Control	3	.59	N/A
Tools of Control	4	.69	1
Centralization	5	.78	1
Marketing Effectiveness	6	.80	1
Environmental Uncertainty	4	.71	1
Routinization	5	.78	1
Market Orientation	9	.73	3

Dependent Variables

It is argued that control consists of bases (power), focus (output or behaviour), and tools. Power was measured using items adapted from Khandwalla (1977 p. 649) and from Bachman as outlined in Price (1972 p.146). The scale, shown in Appendix 1, distinguishes between identitive power and coercive power. A high score indicates identitive power while a low score indicates coercive power. Cronbach's alpha of this scale is .63. It should be noted that the scale shown in Appendix 1 represents a refinement of the Khandwalla and Bachman scales. Neither of those original scales exhibited satisfactory levels of reliability. Accordingly both scales were combined and factor analyzed. The first factor is used as the scale of power in this present study and is interpreted as above. Factor scores are included in Appendix 1.

The preceding treatment of the measurement of power is similar to the use of these measures by Drăgan et al. (1986) and lends credence to their observation that

> [Power] types can be divided into two categories - *organic* and *external*. The organic bases of power rely on one's own decision to participate in a common activity.... The external bases rely on rewards and penalties. (p. 207, emphasis in the original.)

A possible interpretation of the scale, therefore, is that Drăgan et al.'s two categories actually lie on the two ends of one continuum and that "external" bases correspond to coercive power and "organic" correspond, at least approximately, to identitive power.

Appendix 2 lists measures of the focus of control developed for this study, reflecting the unique nature of professional firms. Output and behaviour forms of control are measured individually. The two scales have Cronbach alphas of .59 and .50 respectively. These two scales are subsets of a larger number of questions addressing issues of control. Rather than relying on factor analysis, in this instance items were assigned to the measures of output or behavioral control a priori. Subsequent factor analysis, reported in Appendix 2, on the behaviour control scale confirmed it to be unidimensional. Output control, with only 3 variables, was not amenable to factor analysis.

The measure of tools of control, taken from Khandwalla (1977, p. 674 ff), is listed in Appendix 3. It includes items such as the use of cost control, systematic evaluation and long term forecasting. The Cronbach alpha of this second scale is .69 and factor analysis, also reported in Appendix 3, revealed it to be unidimensional.

Structure is reflected in configuration and centralization. Configuration was measured simply as the number of levels in the organization. Alternative measures of configuration might have been span of control or the number of employees per level. The first was deemed too onerous a task to include in an already long and complex questionnaire while the second has the difficulty of including size (number of employees) as an integral part. The result would be serious problems with correlated measures. The actual measure of configuration is listed in Appendix 6.

Centralization was measured using scales developed by Aiken and Hage (in Price 1972 p.45,46). The Aiken and Hage scale (Appendix 5), which has an alpha of .78 and which the factor analysis in Appendix 5 shows to be unidimensional, is preferred because it focuses on centralization as a function of decision making rather than confounding it with control or with configuration.

Marketing effectiveness, the remaining dependent variable, is also measured subjectively. The instrument used to capture this construct (Appendix 6) is based on a widely known self diagnostic instrument designed by Kotler (in Kotler and Turner, 1981). Kotler's original scales were revised to make them somewhat less obviously value laden and more directly relevant to accounting offices. For example Kotler's use of "customers and products" was replaced with "clients and services". The marketing effectiveness scale has a Cronbach alpha of .80. Loadings for the single factor comprising the scale are reported in Appendix 6.

Independent Variables

The theoretical constructs considered as independent variables in this study are market orientation, environmental uncertainty, technology and organizational size. No prior scale for market orientation existed, however, the other independent variables had been measured in previous studies. Environmental uncertainty (Appendix 7) was measured using a scale from Khandwalla (1977 p. 641, 642). Khandwalla's original scale contained 10 questions. However, when considered as a whole the 10 questions had poor overall reliability and also revealed 3 factors when factor analyzed. The first factor, contained 4 items and is reported in Appendix 7. It adequately captured the notion of environmental uncertainty and had a much more satisfactory alpha of .71.

Technology (Appendix 8) was measured using Hage and Aiken's "Technology Routinization" scale (in Price 1972, p. 151,152). That particular scale was judged the only existing measure of technology which directly applied to accounting offices. Without revision it had an alpha level of .78 and revealed only one underlying factor when factor analyzed. The factor loadings are reported in Appendix 8.

Finally, size was measured (Appendix 9) as the total number of employees. Number of employees is frequently used as an adequate single measure of organizational size (Robbins, 1990). Restricting size to a single measure in this present context avoids possible correlations between measures.

Market orientation is a construct of central importance to this study. At the time the questionnaire was designed no satisfactory scale of market orientation existed. Accordingly, a scale was developed specifically for this study. The scale items came from two sources. Javidan, Murray and Reschenthaler (1987) developed but never published a scale of strategic orientation. The properties of this scale were unknown. Seven items from this scale were included in the questionnaire. An additional nine questions were generated, as described above, with reference to partners within the accounting industry. These latter questions were intended to address issues of market orientation more directly than the scale of Javidan et al. The result was 16 items which could measure market orientation. Using the subsample of 89 individuals, as discussed above, the 16 items were factor analyzed. The first factor included the nine items reported in Appendix 10. A Cronbach's alpha of .73 was calculated for these nine items. A subsequent factor analysis on the nine items, independent of the other seven, revealed 3 additional factors underlying the scale. These factor loadings are reported in Appendix 10. Recognizing the complexity of market orientation as a construct no additional items were removed from the scale in an attempt to force it into unidimensionality. Each scale item seems to add true insight into our understanding of market orientation. Accordingly, the scale was retained in its entirety. However further refinement of the market orientation scale was undertaken as a result of the LISREL analysis and is reported in chapter 4.

Further Measurement Refinement

Further measurement refinement, and eventually the main data analysis, was undertaken using structured equation modelling. It has been widely accepted for some time that structured equation modelling has a legitimate and valuable role to play in the Social Sciences (Bielby and Hauser, 1977). Structured equation modelling provides three powerful benefits to the researcher. Each of these benefits will be discussed in turn.

Structured equation modelling (SEM) allows the researcher to examine concepts that are not directly measurable. In this present study, all of the key constructs under consideration fall into that category. Market orientation is the most obvious construct to consider for illustration purposes. As it has been conceptualized in this study, market orientation is analogous to an organizational attitude. As such it cannot be measured directly; rather specific questions can be asked, the answers to which reveal, or indicate, the attitude. Within structured equation models, indicator variables are explicitly modeled as being caused by underlying, unobserved (or latent) constructs (Jöreskog, 1977).

Secondly, structured equation modelling allows explicit modelling of measurement errors, both of the indicator variables and of the latent variable. This attribute is extremely important in the social sciences as the researcher is often using proxy measures of the true construct of interest. The measurement error can be specified by the researcher in advance (Hayduk, 1988) or (more commonly) calculated by the software program which is solving the structured equation model. LISREL, the software program used in this study, accomplishes this latter feat using maximum likelihood to calculate values for the error terms that are most consistent with the observed values, under the assumption that the model specified by the researcher, in fact, is true. Explicitly including the measurement error contained in a structured model allows the researcher to better study the true underlying relationship of interest, uncontaminated by measurement error.

Finally, and most fundamentally, structured equation models allow the researcher to specify and explicitly test extremely complex causal interrelationships not easily accessible by more traditional methods.

There are several software programs available to aid researchers in the estimation of structured equation models. Of these, the Linear Structural Relationships program, or LISREL, developed by Jöreskog and Sörbom (1989), is the most frequently used. LISREL notation has been widely adopted as the standard notation used within structured equation modelling. Table 3.2 summarizes that notation.

Table 3.2
LISREL Notation

Symbol	Name	Explanation
η	Eta	A vector of unobserved (latent) endogenous constructs.
β	Beta	A matrix of structural coefficients associated with the endogenous concepts.
ξ	Ksi (or Xi)	A vector of unobserved (latent) exogenous constructs.
ϕ	Phi	A covariance matrix of ξ.
Γ or γ	Gamma	A matrix of structural coefficients associated with the exogenous constructs.
Y		A vector of observed indicators of the endogenous constructs.
X		A vector of observed indicators of the exogenous constructs.
Λ or λ	Lamda	A matrix of structural coefficients associated with the observed indicators of the latent constructs.
ε	Epsilon	A vector of errors associated with the measurement of Y.
δ	Delta	A vector of errors associated with the measurement of X.
θ	Theta	A matrix of the covariances of the measurement errors.
ζ	Zeta	A vector of errors associated with η.
ψ	Psi	A matrix of the covariances of ζ.

Using the notation in Table 3.2, the LISREL model consists of the following three equations:

Structural equation model: $\eta = B\eta + \Gamma\xi + \zeta$

Measurement model for y: $y = \Lambda_y\eta + \varepsilon$

Measurement model for x: $x = \Lambda_x\xi + \delta$.

The LISREL model assumes that: ζ is uncorrelated with ξ; ε is uncorrelated with η; δ is uncorrelated with ξ; ζ, ε, and δ are mutually uncorrelated; **I - B** is non-singular (Jörsekog and Sörbom, 1989).

Strong alpha values and single factor scales, such as those reported above, are not completely sufficient to ensure an acceptable measurement in the context of structural equations. Problems can arise in two ways not detected by the alpha tests or by traditional factor analysis. The first is that the unexplained error in a particular indicator variable ("indicator variable" in a LISREL framework are the X or Y variables that are used to indicate the presence of a latent, unobserved endogenous or exogenous construct; the "unexplained variance" or error is labelled theta delta and theta epsilon respectively for the X and Y variables) may be related to the unexplained variance in a second variable, or variables, in a systematic way. Such a relationship, which indicates the presence of unobserved, unexplained constructs, would not affect the alpha values but would reduce the overall fit of a structural model.

Secondly, the X or Y variables could be related to more than one latent construct. Again, this fact would not become evident using an alpha test in isolation but would result in a poorer fitting structural equation model. To put the matter succinctly, measurement problems may arise in structural equation modelling because the error terms of indicator variables are systematically related or because indicator variables are related to more than one latent variable.

Fortunately, both of these situations can be detected and dealt with within the LISREL framework.

A two stage process was followed to purify the measures used in this study. Using the sample of 89 duplicate offices the fit of each construct was assessed in isolation from the remainder of the model. Each construct was modeled as an independent construct with the indicator variables as dependent. Goodness of fit measures were then assessed to determine the adequacy of the measures. This procedure allowed certain problems in measurement to be detected and it also allowed testing, and where appropriate, refinement of the structural composition of the individual constructs. Secondly, the measures were considered simultaneously, allowing the detection of variables which measure more than one latent construct. The resulting measurement model also gives a base level fit to compare the fit of the structural model against. Measurement adjustments and structural adjustments are discussed in turn.

Realizing that the final refinement of the measures used in this study would have to occur after the survey had actually been completed, as many measures of the theoretical constructs as was reasonably possible were included in original questionnaire. This tactic afforded the luxury of discarding measures that were poorly behaved on the criteria discussed above. Accordingly, if one indicator was causing a poor fit in an otherwise good fitting measurement model, the measure was examined to see if it was different in some substantive way than the remaining measures of the same construct. That is, the measure was inspected to see if it was reasonable to conclude that it, in fact, was measuring something at least slightly different than the intended construct. When that conclusion was reached, the measure was deleted. Similarly, as the constructs were tested simultaneously, if an indicator variable was shown to be related to more than one latent construct, it too was deleted, although these measures were likewise carefully examined before being discarded.

As a rule, the measures fit well within a LISREL context and were associated with only one latent construct. In total, six variables out of the original 46 considered in this study were deleted from the model. Specifically, the statement "Long-term forecasting of the technology relevant to your firm or office's products, services or operations," was dropped from the measures of tools of control. The statement, "I have to consult with other partners before I do almost anything," was dropped from the measures of centralization. The statement, "Most jobs have something new happening every day," was dropped from measures of technology routinization. And finally, the two statements requesting a rating of the importance of "The degree to which customer needs may be altered by the new product/service," and "The broad impact on the community," were dropped from the measures of market orientation. The variables dropped are marked with an asterix in the appendices.

Table 3.3 summarizes the final number of measures per construct and the associated goodness of fit measures calculated by LISREL. The end result of the process of measurement refinement was a set of measures that exhibited both satisfactory alpha levels and reasonable goodness of fit statistics.

Table 3.3
LISREL Measures of Fit

Name	# of Items	χ^2	d.f.	Prob.	GFI
Power	4	1.07	2	0.585	0.994
Behaviour Control	4	0.31	2	0.856	0.998
Marketing Effectiveness	6	5.11	9	0.825	0.981
Environmental Uncertainty	4	1.48	2	0.478	0.991
Routinization	4	5.96	2	0.051	0.970

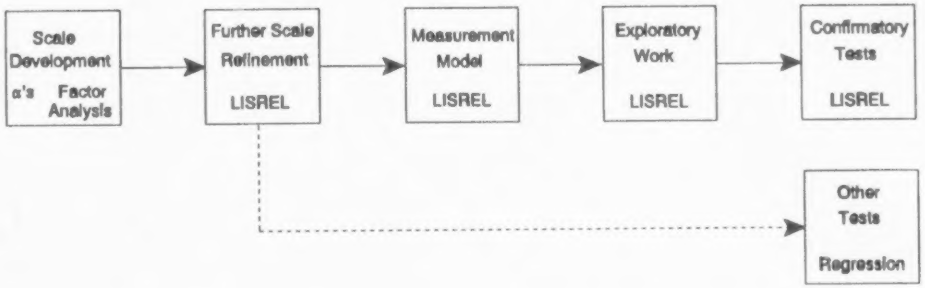

Scale Development
α's Factor Analysis
Further Scale Refinement
LISREL
Measurement Model
LISREL
Exploratory Work
LISREL
Confirmatory Tests
LISREL
Other Tests
Regression

Figure 3.1 Flow Chart of Data Analysis

CHAPTER 4: STRUCTURAL REFINEMENTS

This chapter reports and discusses the results of further refinements to the structural model itself based on exploratory analysis of the sample of duplicate offices. It also reports the results of a comprehensive measurement test which is used to provide a base model fit against which to compare the fit of the proposed structural model.

Structural Refinements

In addition to allowing improvement of the indicator variables, reported in chapter 3, the LISREL analysis of the individual constructs allowed testing and revision of the proposed structural relationships to be undertaken. As indicated above, this exploratory work and refinement was accomplished using the database of 89 duplicate offices and is subsequently tested on the main database. The constructs of market orientation, organizational structure, focus of organizational control and organizational control in its entirety were all recast to some degree as a result of this process. When competing structural models were being tested the statistic considered in adopting one or the other was the change in χ^2 value. Loehlin (1987) outlines the procedure and notes that

> ... a direct comparison ... can be made in the case [where] two models stand in a nested, or hierarchical relationship. That is, the model with the smaller number of free variables can be obtained from the model with the larger number of free variables by fixing one or more of the latter (p. 64).

Loehlin (1987) further points out that, "The χ^2 for this test is just the difference between the separate χ^2 of the two models and the df [degrees of freedom] is just the difference between their dfs..." (p. 64). Those submodels whose χ^2 values were statistically superior, using this process, were adopted. If there was no significant difference between two or more submodels, the simplest was chosen in the interest of parsimony.

Submodels of the overall model were tested in order to more precisely pinpoint where difficulties in the fit of the model might lie. That is, running the overall model as a beginning point gives relatively little information on what adjustments may be appropriate. Rather, the result will often be simply various indicators of difficulties somewhere in the model. When portions of the model are run, however, the researcher receives feedback on the empirical reasonableness of that portion in isolation from the remainder of the model.

The exploratory process of improving the fit of the model obviously has theoretical overtones. Recognizing this fact, revisions to the submodels, and ultimately to the overall model, were not made blindly, simply following the whims of chance relationships. Rather each revision was made with due consideration to the theoretical implications therein implied. Indeed, many possible submodel revisions were never tested at all, on the grounds that the implied empirical relationships made no theoretical sense.

Market Orientation

Market orientation was originally proposed as a single unidimensional construct measured by nine indicators. However, factor analysis indicated the possibility that up to three factors underlay the nine variables.[1] Using the process outlined by Loehlin (1987) and discussed above, LISREL was subsequently employed to test the appropriateness of a one versus a two versus a three factor model of market orientation. Table 4.1 summarizes the results of that analysis. Appendix 11 contains the equations specifying each model of market orientation.

Table 4.1
Three Models of Market Orientation

#	GFI	df	χ^2	Pr.	Δ df	Δ χ^2
1 Factor	.926	20	30.61	.061		
2 Factor	.944	19	22.69	.251	1	7.92
3 Factor	.946	17	20.74	.238	2	1.95

The two factor model of market orientation is shown to be superior: the improvement in fit over the one factor model is statistically significant (1 degree of freedom, Δ χ^2=7.92, pr=.005) whereas there is no significant difference in fit between the two factor and the three factor model (2 degrees of freedom, $\Delta \chi^2=1.95$, pr>.250), in which case the two factor model is preferred on the basis of parsimony.

---

[1] As indicated at the conclusion of chapter 3, market orientation is eventually measured by seven variables. The variable labeled "Strat7" in appendix 10 was identified as problematic early in this analysis and consequently discarded. In contrast the variable labeled "Strat5" in appendix 10 was one of the final variables pruned from the analysis. In the following discussion, therefore, Strat7 has been eliminated but variable Strat5 is still present. It is clear from further testing of market orientation, reported in chapter 5, that the subsequent elimination of strat5 does not materially affect the construct.

It should be noted that two possible explanations exist for the presence of two factors with the construct market orientation. One possibility is that a method variance underlies the two factors. Specifically, the first factor is composed of questions developed for this study while the second is composed of questions used in a previous study (Javidan et al. 1987).

It is also possible that the two factors of market orientation reflect a real content difference. When the scale used to measure market orientation is examined, the first factor possibly represents the organization's internal understanding and communication of customer needs. The second factor, in contrast, may represent the organization's coordination with the customer. Reflecting both possibilities, the first factor is labelled MOA/internal and the second factor is labelled MOB/external. If the effect of the two factors within the model is consistent throughout the study it can be reasonably concluded that a method factor explains the difference between them. On the other hand, if the two factors behave in contradictory ways, the conclusion that real content differences are reflected is more likely. In fact, the analysis discussed in chapters five and six, indicates that the latter interpretation is the more appropriate. It is interesting to note that although market orientation is conceptualized somewhat differently (as discussed in chapter 2) the internal/external distinction is suggestive of Narver and Slater's (1990) customer orientation and inter-functional coordination components of market orientation.

Although reflecting somewhat different content, the MOA/internal and MOB/external are clearly related both theoretically and empirically. This fact is reflected in the structural model by allowing the factors to correlate. Figure 4.1 illustrates the model of market orientation used for the remainder of the study.

Organizational Structure

The original specification of organization structure was as a second order model with the first order constructs, centralization and levels, being caused by structure. Centralization and levels were, in turn, measured by three and one directly observed variables respectively. Figure 4.2 illustrates this conception.

LISREL failed to converge to an acceptable solution when this model was tested indicating that a simpler, or at least different, model was required. Two competing revised models were tested: a single factor model and a two factor model. In the single factor model, structure was portrayed as a first order construct measured by four variables. In the two factor model centralization and organizational levels are shown as two unrelated constructs. That is, the two factor model suggests that there is absolutely no relationship between centralization and the number of levels within an organization. Table 4.2 summarizes the results of the test. Appendix 12 contains the equations specifying the three models of structure that were tested.

Table 4.2
Two Models of Structure

#	GFI	df	X^2	Pr.	Δ df	Δ X^2
2 Factor	.959	8	7.23	.512		
1 Factor	.964	7	6.49	.484	1	.72

Although the two models fit very similarly, the one factor model is preferred both on theoretical grounds and for the sake of parsimony. Figure 4.3 illustrates the adopted model of structure. This outcome no doubt reflects the fact that centralization and levels tend to be closely related - as centralization increases the number of levels decreases. Structure was originally portrayed with levels and centralization separated to reflect the fact that the two subconstructs, theoretically at least, are not constrained to be closely related. In this particular sample, however, it is evident that the distinction is not helpful.

Organizational Control

Several changes were made to the model of organizational control based on the exploratory portion of the study. Control was initially conceptualized as a third order construct. The second order constructs were, focus, tools and power. Focus, in turn was measured by the first order constructs, behaviour control and output control. Figure 4.4 illustrates the original model. The global goodness of fit measures for the overall model of control were reasonably acceptable. The χ^2 value, with 97 degrees of freedom was 107 (probability of occurring by chance of .222) and the goodness of fit index was .860. However, several indicators of underlying problems with the model were evident. The psi matrix (the unexplained variance on the dependent unobserved construct) had a negative, and hence unacceptable, value. This particular difficulty was associated with the second order construct "focus". There were further indicators of problems with this construct. Recall that the proposition was that there exists a second order construct, focus of control, which is made up of the first order constructs, behavioral control and output control. In the model, the path from focus to behaviour (β_{25}) is fixed to 1, in order to establish a common scale for the construct focus. The resulting standardized estimate for the path from focus to output (β_{15}) was a weak 0.167, indicating the strong possibility of an underlying problem with the specified relationship.

The second major problem with the computed solution was that the Lisrel program achieved an acceptable fit by setting the path from control to focus of control, and to tools of control (γ_{51} and γ_{31}, respectively) to zero. The path from control to power (γ_{41}), was specified as 1.00 to establish the scale of control. In other words, fit was achieved by specifying a complete absence of a relationship between power and the remaining proposed components of control. In sum, the problems within the model of control called into question the specified relationships between focus of control and output and behaviour control, and between power and the other proposed components of control. Equation 4.1 shows the tested structural relationship in detail and equation 4.2 shows the LISREL parameters for that relationship.

$$\begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\end{pmatrix} = \begin{pmatrix}0 & 0 & 0 & 0 & \beta_{15}\\ 0 & 0 & 0 & 0 & \beta_{25}\\ 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\end{pmatrix} \begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\end{pmatrix} + \begin{pmatrix}0\\ 0\\ \gamma_{31}\\ \gamma_{41}\\ \gamma_{51}\end{pmatrix} (\xi_1) + \begin{pmatrix}\zeta_1\\ \zeta_2\\ \zeta_3\\ \zeta_4\\ \zeta_5\end{pmatrix}$$

4.1 Organizational Control

Several modifications were made to the model of control based on these preliminary findings. As reported below, the revised models of control were retested on the exploratory data base with somewhat ambivalent results. It was not until the relationship between structure and control was tested and explored that a satisfactory model of control was arrived at.

$$\begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\end{pmatrix} = \begin{pmatrix}0 & 0 & 0 & 0 & 0.167\\ 0 & 0 & 0 & 0 & 2.363\\ 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\end{pmatrix}\begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\end{pmatrix} + \begin{pmatrix}0\\ 0\\ 0\\ 1.941\\ 0\end{pmatrix}(\xi_1) + \begin{pmatrix}0.972\\ -4.585\\ 1.000\\ 1.000\\ 1.000\end{pmatrix}$$

4.2 Organizational Control Parameters

The first change in the model of control was that the notion of focus of control as a separate construct was dropped. This step was taken in part because of the rather discouraging test outcome reported above, and also because an examination of the correlations of the four constructs, output, behaviour, tools and power, calculated by Lisrel (table 4.3) showed a relatively weak correlation (.394) between output control and behaviour control even though one would expect a strong relationship if they were, in fact, both indicators of the same latent construct.

Table 4.3
Correlations of the Components of Control

	Output	Behaviour	Tools	Power
Output	1.000			
Behaviour	.394	1.000		
Tools	.562	.319	1.000	
Power	.146	.474	.051	1.000

The exploratory work indicated that the construct, focus, was better conceived as two separate constructs, behaviour and output which directly measured control without need for the intervening construct, focus. This conceptualization implies that the two foci of control are not necessarily exclusive nor are they mutually dependent. Rather they are independent and can be used simultaneously. This understanding is consistent with Ouchi and MacQuire (1975) who argue that behavioral control and output control techniques are not substitutes but rather perform different functions within an organization. More recently, Snell (1992) has made the same point, arguing that behaviour control and output control can be present simultaneously within an organization.

Given the unsatisfactory results of the tests of the initial model of control, three alternative models were tested. The first depicted control as a single factor construct, that is, all measures related to control were modeled as indicators of one latent construct (figure 4.5). The second model consisted of four first order constructs, behaviour, output, tools, and power, which are caused by a second order construct, control (figure 4.6). The third representation modelled control as a third order construct. It underlay a second order, unnamed, construct which caused the output, behaviour and tools of control. Power, was directly caused by control (figure 4.7). Table 4.4 summarizes the results of these tests.

Table 4.4
Three Models of Control

Model	GFI	df	χ^2	Pr	Δ DF	Δ χ^2
1 Factor	.769	77	170	.000		
2nd Order	.853	74	108.12	.006	3	61.88
3rd Order	.883	72	83.7	.163	2	24.42

It is clear from the table that the third order model results in the best fit when control is examined in isolation from the rest of the theoretical model under consideration. The implication of this model of control is that the relationship between power and control is substantively different than the relationship between behaviour, output and tools, and control. A possible interpretation of the revised model is that while output, behaviour and tools of control are means of establishing, maintaining control within an organization, power is better conceived as an outgrowth, or consequence, of control.

Despite the satisfactory indicators of the fit of the revised model, when other components of the overall model are added to the model of control, most particularly structure, the model of control requires further modification. We now turn our attention to the relationship between structure and control.

Structure and Control

The model examining the relationship between structure and control was built and tested in a sequential fashion. The first step was simply to consider the models of structure and control, described above, simultaneously without specifying any relationship between them (figure 4.8). The rationale behind this procedure was to provide a base level of fit against which to compare the theoretically driven model. This expedient resulted in a χ^2 of 180.96 with 161 degrees of freedom (pr. .134) and a goodness of fit index of .824. This level of fit is quite acceptable, however, there were indications of underlying problems with the base model. Specifically the unexplained variance term associated with the latent construct, control, was not identified.

The theoretically conjectured relationship, that structure is caused by control, was specified as the next stage in the development of the understanding of the relationship of structure and control (figure 4.9). This second test resulted in a χ^2 of 177.59 with 160 degrees of freedom (pr. .160). The goodness of fit index was .825. These results indicate a change in χ^2 of 3.37 with one degree of freedom which is significant at the .100 level but not at the .05 level.

Closer examination of the model again revealed evidence of underlying difficulties. Although the model is now identified, the psi matrix contains a negative value. In particular, the unexplained variance associated with the construct power, is negative (value -0.026) and hence is out of bounds. A technically acceptable solution to this problem is to note that this term has a relatively large standard error associated with it (.759) and thus can be considered to be not statistically different than zero. Despite this technically acceptable solution, further indicators of problems with this model were noted.

The most troublesome problem with the model is the lack of significance of some of the main paths. Specifically, within the context of this larger model, the third order model of control breaks down, with the relationship from the third

$$\begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\\ \eta_6\\ \eta_7\end{pmatrix} = \begin{pmatrix}0 & 0 & 0 & 0 & \beta_{15} & 0 & 0\\ 0 & 0 & 0 & 0 & \beta_{25} & 0 & 0\\ 0 & 0 & 0 & 0 & \beta_{35} & 0 & 0\\ 0 & 0 & 0 & 0 & 0 & \beta_{46} & 0\\ 0 & 0 & 0 & 0 & 0 & \beta_{56} & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0 & \beta_{76} & 0\end{pmatrix}\begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\\ \eta_6\\ \eta_7\end{pmatrix} + \begin{pmatrix}\zeta_1\\ \zeta_2\\ \zeta_3\\ \zeta_4\\ \zeta_5\\ \zeta_6\\ \zeta_7\end{pmatrix}$$

4.3 The relationship between structure and control.

order construct, control, to the unnamed second order construct, becoming insignificant, although power is still associated with control. Expressed another way, the LISREL program has, again, achieved an acceptable fit by forcing the relationship between focus, behaviour, and output, and power, to be insignificant. Equation 4.3 details the model tested and equation 4.4 gives the relevant parameters estimated by LISREL.

It seemed reasonable, at this stage, to introduce the underlying causal relationships hypothesized to see if the conundrum could thereby be resolved. As shall be demonstrated below, considering the model as a whole does, indeed, clarify the relationships.

The Complete Structural Model

Three versions of the completely specified model were tested using the exploratory data set. These models are shown

$$\begin{pmatrix}\eta_1\\\eta_2\\\eta_3\\\eta_4\\\eta_5\\\eta_6\\\eta_7\end{pmatrix} = \begin{pmatrix}0&0&0&0&0.773&0&0\\0&0&0&0&0.555&0&0\\0&0&0&0&0.671&0&0\\0&0&0&0&0&1.047&0\\0&0&0&0&0&0.247&0\\0&0&0&0&0&0&0\\0&0&0&0&0&0.240&0\end{pmatrix}\begin{pmatrix}\eta_1\\\eta_2\\\eta_3\\\eta_4\\\eta_5\\\eta_6\\\eta_7\end{pmatrix} + \begin{pmatrix}0.403\\0.692\\0.549\\-0.097\\0.939\\1.000\\0.942\end{pmatrix}$$

4.4 The relationship between structure and control.

in figures 4.10, 4.11 and 4.12. The three models are very similar, differing primarily in how they treat the construct, power. The models have in common that they depict organizational structure and control as being caused by environmental uncertainty, technology, organizational size and the interpretive scheme, market orientation. Structure and control, in turn, cause marketing effectiveness.

The first model, represented in figure 4.10, maintained the revised sub-model of control and structure. The implication of this model is that power is an aspect of control but that it is different in some way than the constructs, output, behaviour and tools. Expressed another way, the constructs, output, behaviour and tools are more similar to each other than they are to the construct power.

The second model, shown in figure 4.11, models control as a second order construct which causes focus, output, behaviour and power. The implication of figure 4.11, in contrast with the initial model, is that power is simply a fourth aspect of control, no different in substance or relationship than the constructs, output, behaviour and tools.

The final model, illustrated in figure 4.12, depicts control as a second order model. Control causes the focus on output and behaviour and the tools of control. Power is caused by control but is also allowed to be influenced by other aspects of the overall model, specifically by organizational structure. Power is also depicted as directly influencing marketing effectiveness. The implication of the third model is that power is an outcome of control and structure rather than an integral part of control, as the first two models suggest. It should be noted though, that although figure 4.12 looks quite different from the figures 4.10 and 4.11, it is really identical to 4.11 with two additional paths freed, those being the path from structure to power and the path from power to marketing effectiveness.

Table 4.5 compares the measures of fit of the three models.

Table 4.5
Comparing Three Final Models

Models	GFI	DF	χ^2	Δ df	Δ χ^2
1	.674	772	1048		
2	.734	759	1090.78	13	42
3	.735	757	1080.96	2	9.82

In comparing the three models, the change in χ^2 from model 1 to model 2, 42 with 13 degrees of freedom, is significant at the .001 level, while the change in χ^2 from model 2 to model 3, 9.82 with 2 degrees of freedom is significant at the .005 level. The third model, depicting power as caused by both control and structure, therefore, is accepted as best fitting the exploratory data set. We turn now to consideration of the measurement model, developed to test the acceptability of the overall model.

The Measurement Model

There are several ways to assess the adequacy of fit of a structural equation model. The most straightforward approach is simply to run the structural model under consideration and examine the various goodness of fit indicators the LISREL program produces. This tack encounters difficulties as the structural model grows in size. Goodness of fit measures are cumulative, that is, many small deviations of fit, of no consequence of themselves, in combination will cause a poor global goodness of fit measure. The present model suffers from this latter difficulty. Many published structural equation models deal with ten to twenty indicator variables (e.g. a recent article by Lusch and Laczniak, 1987, considers fourteen indicator variables and three latent constructs). The present model contains forty variables and twelve latent constructs. In the terms of structural equation modelling, therefore, the model under examination is very large and is especially prone to the problem of accumulation of small deviations in fit.

A useful suggested "two-step approach" to the problem (Anderson and Gerbing, 1988) is to develop an initial measurement model as an intermediate step in testing the efficacy of the structural model. Recall from chapter 3 that the general LISREL model consists of three equations:

Structural equation model: $\eta = B\eta + \Gamma\xi + \zeta$

Measurement model for y: $y = \Lambda_y\eta + \varepsilon$

Measurement model for x: $x = \Lambda_x\xi+\delta$.

The central thrust of Anderson and Gerbing's (1988) argument is that for theory testing purposes, deviations in fit between the proposed model and the empirical data, that result purely from imperfect measurement, are of little practical significance. Accordingly, they suggest that a measurement model which tests the goodness of fit of the measures employed when the structural relationships (i.e. the beta and eta matrices) are unspecified and free for the LISREL program to calculate, be developed. This approach results in the program coming to the best possible fit for the data given the measures employed. The fit of the measurement model is then employed as a touchstone against which to test structural refinements. The fit of the theory driven structural model, which specifies the beta and eta paths, should not be significantly different than the fit of the measurement model. Given that many possible structural paths will be specified to zero (i.e. the theoretical model is much more constrained than the measurement model) assuming no significant difference in fit between the two models the theoretical model is preferred on the grounds of parsimony.

Two measurement models were calculated for this study using the exploratory dataset of 89 offices. The first tested the fit of the measures when all constructs were first order. It resulted in a χ^2 with 719 degrees of freedom of 994.82 and a goodness of fit index of .755. However, arguably in cases where the second order properties of a structural model are in fact functions of measurement, the second order relationship should be included in the measurement. That is, any additional lack of fit originating with the second order relationship really reflects a measurement problem and not a structural problem. Accordingly, a measurement model which reflected the construct, control, was estimated. This second model showed the constructs, tools, behaviour and output, as measures of control. Control was then allowed to freely correlate with the remaining first order constructs. However, the other first order constructs were not allowed to directly correlate with tools, output and behaviour. The second order measurement model resulted in a χ^2 with 735 degrees of freedom of 1015.76 and a goodness of fit index of .751. These results represent the best fit that it is possible to achieve given the measures employed in this study. Figure 4.13 and 4.14 illustrate the two measurement models. It should be noted that the measurement models were originally developed on the smaller dataset of 89 offices. The lambda coefficients were fixed at the values established in the initial data run and the measurement models were rerun on the larger dataset. Establishing the measurement model on the same dataset as the confirmatory structural model allows a direct comparison of the measures of fit to made with greater confidence that the results of the comparison reflect differences in the models and not differences in the data. The measures of fit reported above, therefore, are based on the larger dataset.

The second measurement model will be used to assess the fit of the structural model. If the fit of the structural model is not significantly different than that of the measurement model then the fit of the structural model is accepted as adequate (i.e. the structural model fits no worse than the best fit possible [the measurement model] and as it is far more restrictive than the structural model is preferred on the grounds of parsimony.) Chapter 5 discusses the results of this assessment.

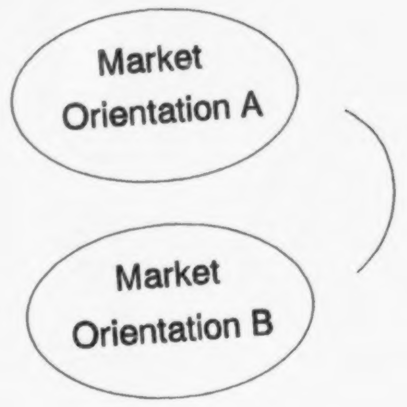

Market
Orientation A
Market
Orientation B

Figure 4.1 Market Orientation as Two Factors

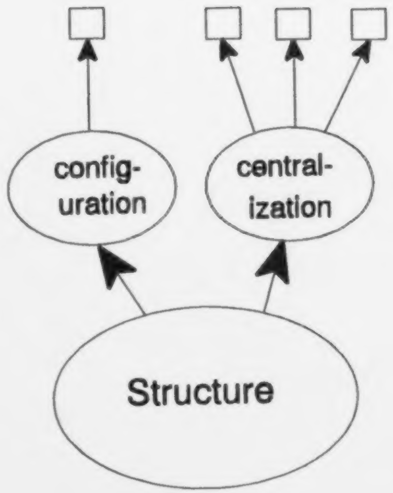

config-
uration
central-
ization
Structure

Figure 4.2 Original Specification of Structure

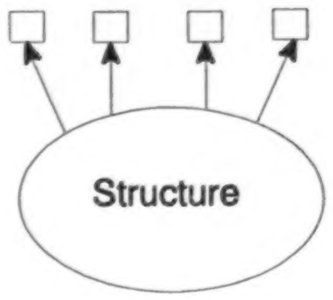


Figure 4.3 Structure as One Factor

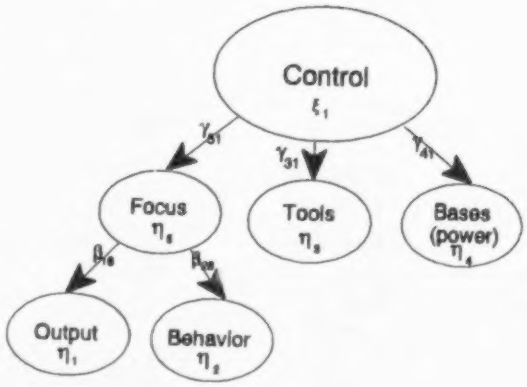

Control
ξ_1
γ_{51}
γ_{31}
γ_{41}
Focus
η_5
Tools
η_3
Bases
(power)
η_4
β_{15}
β_{25}
Output
η_1
Behavior
η_2

Figure 4.4 Original Specification of Control

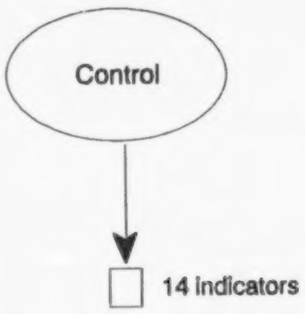

Control
14 indicators

Figure 4.5 Control as One Factor

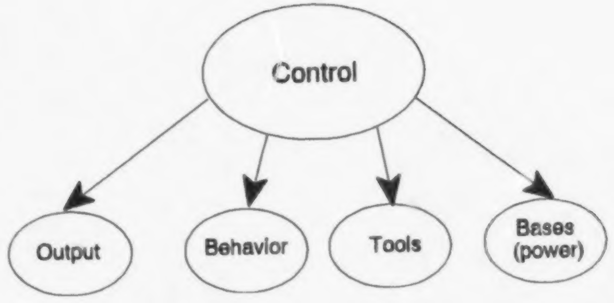

Control
Output
Behavior
Tools
Bases
(power)

Figure 4.6 Control as Four Factors

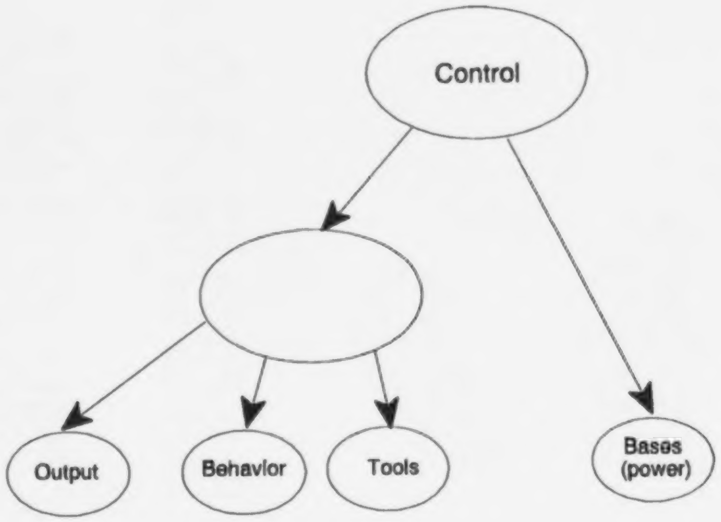

Control
Output
Behavior
Tools
Bases
(power)

Figure 4.7 Third Order Model of Control

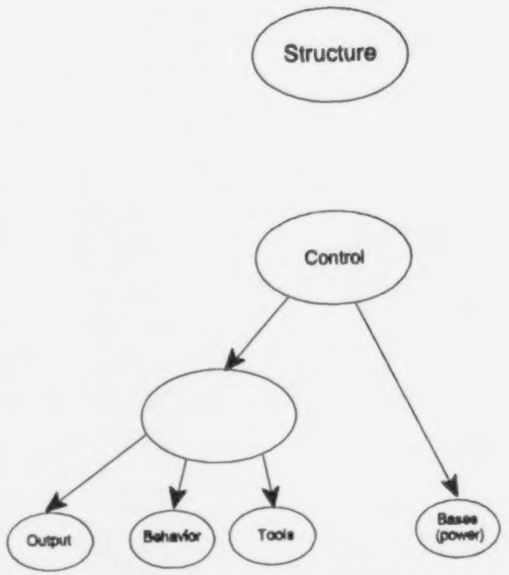

Structure
Control
Output
Behavior
Tools
Bases
(power)

Figure 4.8 Control and Structure with no Relationship Specified

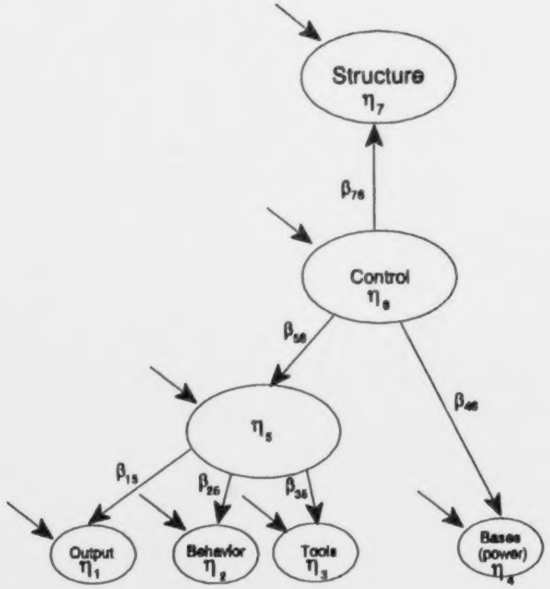

Structure
η_7
β_{76}
Control
η_6
β_{56}
β_{46}
η_5
β_{15}
β_{25}
β_{35}
Output
η_1
Behavior
η_2
Tools
η_3
Bases
(power)
η_4

Figure 4.9 Control Causing Structure

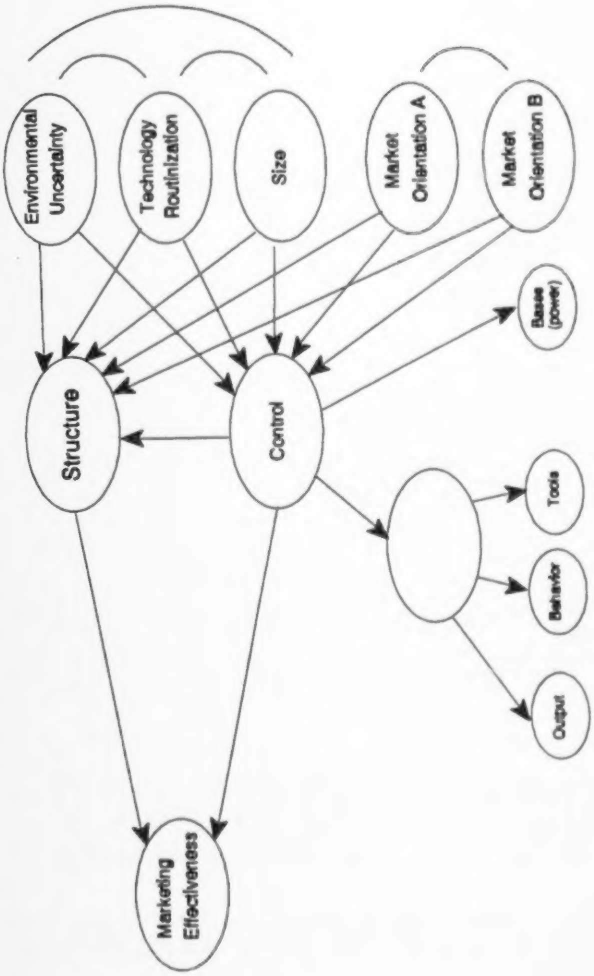

Environmental Uncertainty
Technology Routinization
Size
Market Orientation A
Market Orientation B
Structure
Control
Bases (power)
Tools
Behavior
Output
Marketing Effectiveness

Figure 4.10 Model 1

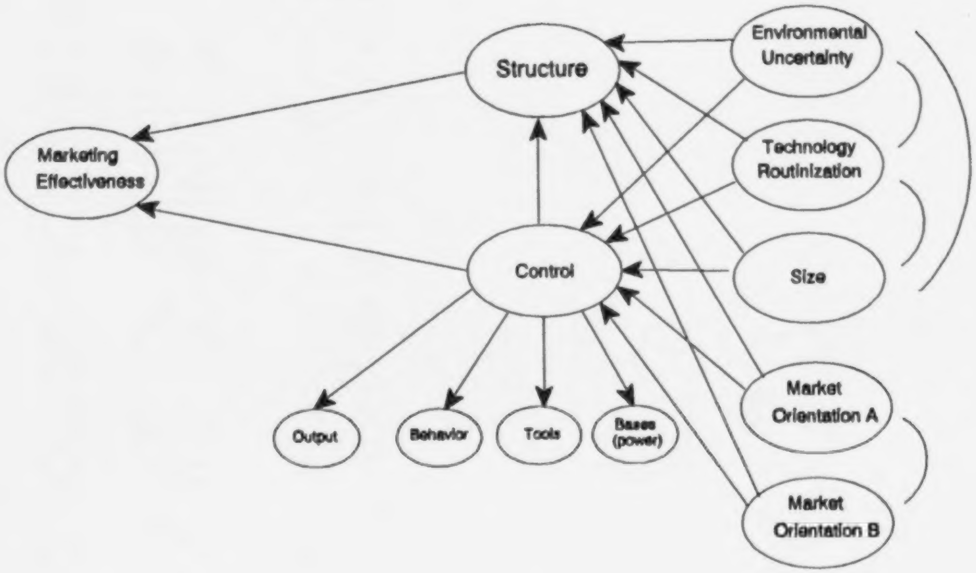

Structure
Environmental Uncertainty
Technology Routinization
Size
Market Orientation A
Market Orientation B
Marketing Effectiveness
Control
Output
Behavior
Tools
Bases (power)

Figure 4.11 Model 2

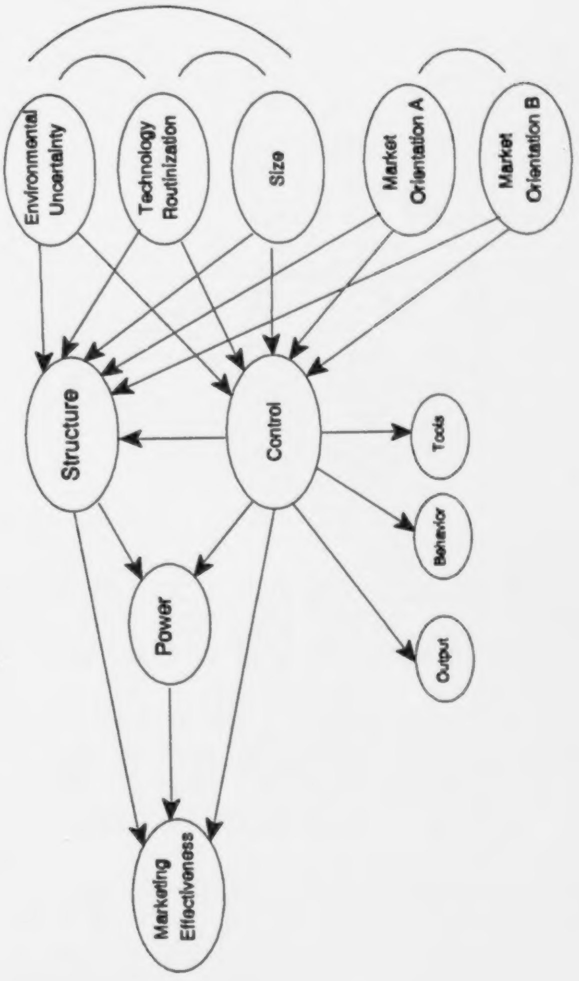

Environmental Uncertainty
Technology Routinization
Size
Market Orientation A
Market Orientation B
Structure
Control
Tools
Behavior
Output
Power
Marketing Effectiveness

Figure 4.12 Final Model

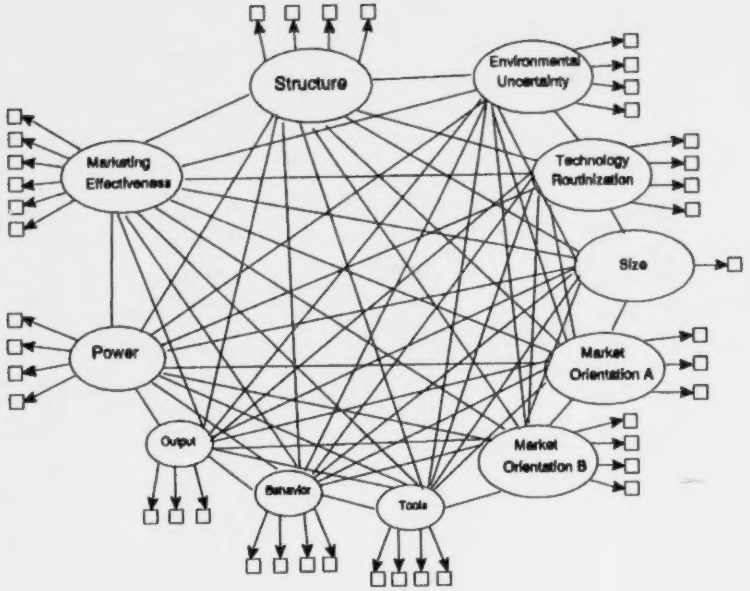

Structure
Environmental Uncertainty
Marketing Effectiveness
Technology Routinization
Size
Power
Market Orientation A
Output
Market Orientation B
Behavior
Tools

Figure 4.13 First Measurement Model

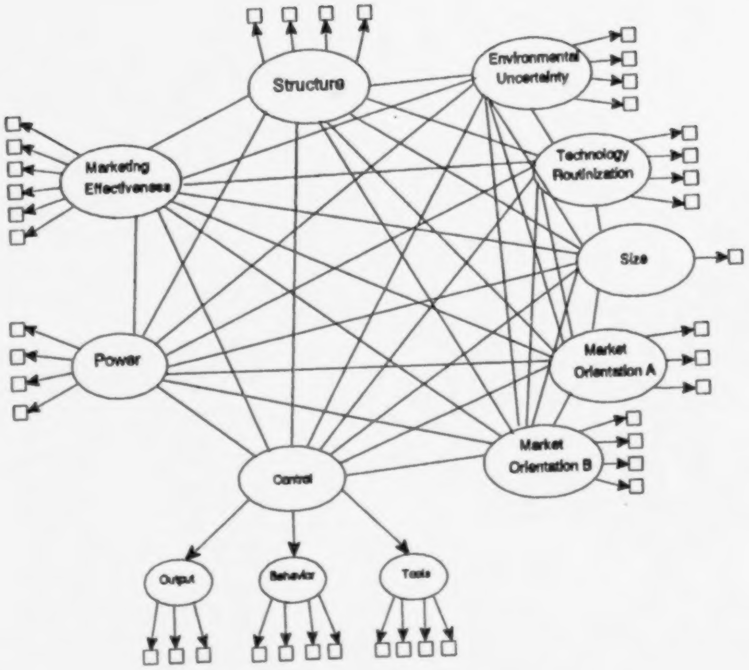

Structure
Environmental Uncertainty
Marketing Effectiveness
Technology Routinization
Size
Power
Market Orientation A
Market Orientation B
Control
Output
Behavior
Tasks

Figure 4.14 Final Measurement Model

CHAPTER 5: THE STRUCTURAL MODEL

The exploratory work, discussed above, resulted in the model illustrated in figure 4.12. One additional change was made in this model before the confirmatory test was run. That change is that the path from technology routinization to organizational control has been deleted. This change reflects the absence of a significant relationship between these constructs in earlier exploratory work. It should be noted that this finding could perhaps have reasonably been predicted inasmuch as earlier studies which found a relationship between organizational structure and technology, such as Woodward (1965), tended to define structure in the more narrow sense that it is used in this present study while paying rather less attention to control issues per se. As is discussed below, it also supports Miller and Drôge's (1986) observation of the inconsistency of the findings relating to technology's effect on structure in previous studies.

Confirmatory Testing

The final structural model tested is shown in figure 5.1. The confirmatory test was conducted using the main dataset of 137 offices and resulted in a χ^2 of 1035.66 with 752 degrees of freedom and a goodness of fit index of .747. As reported in chapter 4, the χ^2 of the measurement model is 1015.76 with 735 degrees of freedom. The difference in χ^2 between the structural model and the measurement model, therefore, is 20 with 17 degrees of freedom. This difference is not significant (pr > .100) indicating that the fit of the structural model is statistically equivalent to that of the measurement model and hence is accepted.

Discussion of the Model

In broad terms the model supports the original theoretical propositions of this thesis that organizational structure and control are caused by the traditional contingencies of contingency theory, as well as interpretive schemes, specifically, the interpretive scheme called market orientation. It further suggests that organizational power, or more precisely, the type of power exercised within an organization, in turn, is caused by the nature of the structure and control of the organization. Marketing effectiveness, in its turn, is caused by structure, control and power.

When the statistical significance of the various paths is examined a number of qualifications must be attached to the above broad outline when drawing empirical conclusions. First, not all of the contingencies are of equal importance in determining structure and control. Additionally, structure and control are not determined equally by the same contingencies. Secondly, power does not appear to have a causal relationship with marketing effectiveness. Let us turn our attention to examining and interpreting the model in detail.

Figure 5.1 can also be described through the following equations. The equations which follow use the notation contained in Table 5.1.

Table 5.1
Variable Notation

Variable Name	Lisrel Notation
EXOGENOUS VARIABLES	
Environmental Uncertainty	ξ_1
Technology Routinization	ξ_2
Size	ξ_3
Market Orientation (A)	ξ_4
Market Orientation (B)	ξ_5
ENDOGENOUS VARIABLES	
Output	η_1
Behaviour	η_2
Tools	η_3
Power	η_4
Structure	η_5
Control	η_6
Marketing Effectiveness	η_7

Equation 5.1 describes the core structural model.

$$\begin{pmatrix}\eta_1\\\eta_2\\\eta_3\\\eta_4\\\eta_5\\\eta_6\\\eta_7\end{pmatrix} = \begin{pmatrix}0&0&0&0&0&1&0\\0&0&0&0&0&\beta_{26}&0\\0&0&0&0&0&\beta_{36}&0\\0&0&0&0&\beta_{45}&\beta_{46}&0\\0&0&0&0&0&0&0\\0&0&0&0&0&0&0\\0&0&0&\beta_{74}&\beta_{75}&\beta_{76}&0\end{pmatrix}\begin{pmatrix}\eta_1\\\eta_2\\\eta_3\\\eta_4\\\eta_5\\\eta_6\\\eta_7\end{pmatrix} + \begin{pmatrix}0&0&0&0&0\\0&0&0&0&0\\0&0&0&0&0\\0&0&0&0&0\\\gamma_{51}&\gamma_{52}&\gamma_{53}&\gamma_{54}&\gamma_{55}\\\gamma_{61}&0&\gamma_{63}&\gamma_{64}&\gamma_{65}\\0&0&0&0&0\end{pmatrix}\begin{pmatrix}\xi_1\\\xi_2\\\xi_3\\\xi_4\\\xi_5\end{pmatrix} + \begin{pmatrix}\zeta_1\\\zeta_2\\\zeta_3\\\zeta_4\\\zeta_5\\\zeta_6\\\zeta_7\end{pmatrix}$$

5.1 Unobserved Dependent Constructs

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \\ x_{13} \\ x_{14} \\ x_{15} \\ x_{16} \end{pmatrix} = \begin{pmatrix} \lambda_{11} & & & & \\ \lambda_{21} & & & & \\ \lambda_{31} & & & & \\ \lambda_{41} & & & & \\ & \lambda_{52} & & & \\ & \lambda_{62} & & & \\ & \lambda_{72} & & & \\ & \lambda_{82} & & & \\ & & \lambda_{93} & & \\ & & & \lambda_{104} & \\ & & & \lambda_{114} & \\ & & & \lambda_{124} & \\ & & & & \lambda_{135} \\ & & & & \lambda_{145} \\ & & & & \lambda_{155} \\ & & & & \lambda_{165} \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_4 \\ \xi_5 \end{pmatrix} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \end{pmatrix}$$

5.2 Independent Indicator Variables

Equation 5.2 describes the relationship between the X variables (the independent indicator variables) and the Ksi variables (the independent unobserved variables). Equation 5.3 describes the relationship between the Y variables (the dependent indicator variables) and the eta variables (the dependent latent constructs). Equation 5.4 describes the correlations between the Ksi variables. Equations 5.5 through 5.8 are the same equations respectively with values included for the parameters.

The total coefficient of determination for the structural equations is a reasonably impressive 0.549, indicating that half the variance in the Y variables is accounted for in the

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \\ y_8 \\ y_9 \\ y_{10} \\ y_{11} \\ y_{12} \\ y_{13} \\ y_{14} \\ y_{15} \\ y_{16} \\ y_{17} \\ y_{18} \\ y_{19} \\ y_{20} \\ y_{21} \\ y_{22} \\ y_{23} \\ y_{24} \end{pmatrix} = \begin{pmatrix} 1 & & & & & & \\ \lambda_{21} & & & & & & \\ \lambda_{31} & & & & & & \\ & 1 & & & & & \\ & \lambda_{52} & & & & & \\ & \lambda_{62} & & & & & \\ & \lambda_{72} & & & & & \\ & & 1 & & & & \\ & & \lambda_{93} & & & & \\ & & \lambda_{103} & & & & \\ & & & 1 & & & \\ & & & \lambda_{124} & & & \\ & & & \lambda_{134} & & & \\ & & & \lambda_{144} & & & \\ & & & & 1 & & \\ & & & & \lambda_{165} & & \\ & & & & \lambda_{175} & & \\ & & & & \lambda_{185} & & \\ & & & & & & 1 \\ & & & & & & \lambda_{207} \\ & & & & & & \lambda_{217} \\ & & & & & & \lambda_{227} \\ & & & & & & \lambda_{237} \\ & & & & & & \lambda_{247} \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \\ \eta_6 \\ \eta_7 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \\ \varepsilon_8 \\ \varepsilon_9 \\ \varepsilon_{10} \\ \varepsilon_{11} \\ \varepsilon_{12} \\ \varepsilon_{13} \\ \varepsilon_{14} \\ \varepsilon_{15} \\ \varepsilon_{16} \\ \varepsilon_{17} \\ \varepsilon_{18} \\ \varepsilon_{19} \\ \varepsilon_{20} \\ \varepsilon_{21} \\ \varepsilon_{22} \\ \varepsilon_{23} \\ \varepsilon_{24} \end{pmatrix}$$

5.3 Observed Indicator Variables

$$\boldsymbol{\Phi} = \begin{pmatrix} \phi_{21} & & \\ \phi_{31} & \phi_{32} & \\ & & \\ & & \phi_{54} \end{pmatrix}$$

5.4 Matrix of correlations between XI variables.

model. This degree of explanatory power is more striking when one considers Anderson and Gerbing's (1988) observation that the estimation method used in this study, maximum likelihood, is best suited to theory testing (hence its use in this context) and does not necessarily result in the maximum variance explained possible with other methods.

Other Observations

Structure and control are influenced by different contingencies. Structure is most strongly influenced by technology routinization (standardized coefficient -.311, Lisrel T value 2.2) in that technology routinization leads to a centralized structure. The paths from environmental uncertainty, size, to structure are not significant. On the other hand, there is no relationship between technology routinization, and control. The strongest influence of the three traditional contingencies on control is environmental

$$\begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\\ \eta_6\\ \eta_7\end{pmatrix} = \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0.652 & 0\\ 0 & 0 & 0 & 0 & 0 & 0.926^1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0.675^1 & 0\\ 0 & 0 & 0 & 0 & 0.372^1 & 0.284^1 & 0\\ 0 & 0 & 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0 & -0.364 & 0\\ 0 & 0 & 0 & 0.120^2 & 0.276^1 & 0.284 & 0 \end{pmatrix} \begin{pmatrix}\eta_1\\ \eta_2\\ \eta_3\\ \eta_4\\ \eta_5\\ \eta_6\\ \eta_7\end{pmatrix} + \begin{pmatrix} 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0\\ 0.016 & -0.311^1 & -0.041 & -0.090^3 & 0.453^2\\ -0.172^3 & 0 & 0.112 & 0.320^1 & 0.388^1\\ 0 & 0 & 0 & 0 & 0 \end{pmatrix} \begin{pmatrix}\xi_1\\ \xi_2\\ \xi_3\\ \xi_4\\ \xi_5\end{pmatrix} + \begin{pmatrix}0.575^1\\ 0.142\\ 0.544^1\\ 0.808^1\\ 0.764^1\\ 0.581^1\\ 0.810^1\end{pmatrix}$$

5.5 Unobserved Dependent Constructs (Standardized Values)

[1] LISREL T values > 2.

[2] LISREL T values = 1.9.

[3] LISREL T values = 1.4.

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \\ y_8 \\ y_9 \\ y_{10} \\ y_{11} \\ y_{12} \\ y_{13} \\ y_{14} \\ y_{15} \\ y_{16} \\ y_{17} \\ y_{18} \\ y_{19} \\ y_{20} \\ y_{21} \\ y_{22} \\ y_{23} \\ y_{24} \end{pmatrix} = \begin{pmatrix} 1 & & & & & \\ 2.762 & & & & & \\ 2.576 & & & & & \\ & 1 & & & & \\ & 1.155 & & & & \\ & 1.799 & & & & \\ & 1.653 & & & & \\ & & 1 & & & \\ & & 1.015 & & & \\ & & 1.161 & & & \\ & & & 1 & & \\ & & & 1.315 & & \\ & & & 1.535 & & \\ & & & 0.631 & & \\ & & & & 1 & \\ & & & & 1.040 & \\ & & & & 1.013 & \\ & & & & -0.156 & \\ & & & & & 1 \\ & & & & & 0.896 \\ & & & & & 1.129 \\ & & & & & 0.941 \\ & & & & & 1.030 \\ & & & & & 0.663 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \\ \eta_6 \\ \eta_7 \end{pmatrix} + \begin{pmatrix} 0.830 \\ 0.161 \\ 0.335 \\ 0.912 \\ 0.832 \\ 0.765 \\ 0.646 \\ 0.758 \\ 0.575 \\ 0.524 \\ 0.956 \\ 0.543 \\ 0.403 \\ 0.901 \\ 0.620 \\ 0.556 \\ 0.556 \\ 0.966 \\ 0.599 \\ 0.629 \\ 0.450 \\ 0.687 \\ 0.797 \\ 0.698 \end{pmatrix}$$

5.6 Observed Indicator Variables

uncertainty with a standardized coefficient of -.172 and a T value of 1.4 implying that increased environmental uncertainty results in less intense control systems.

In contrast to the varying influence of the traditional contingencies of organizational theory, structure and control are both influenced by both components of the interpretive

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \\ x_9 \\ x_{10} \\ x_{11} \\ x_{12} \\ x_{13} \\ x_{14} \\ x_{15} \\ x_{16} \end{pmatrix} = \begin{pmatrix} 0.762 & & & & \\ 0.582 & & & & \\ 0.682 & & & & \\ 0.448 & & & & \\ & 0.682 & & & \\ & 0.862 & & & \\ & 0.681 & & & \\ & 0.523 & & & \\ & & 0.894 & & \\ & & & 0.577 & \\ & & & 0.467 & \\ & & & 0.572 & \\ & & & & 0.293 \\ & & & & 0.549 \\ & & & & 0.757 \\ & & & & 0.471 \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \\ \xi_3 \\ \xi_4 \\ \xi_5 \end{pmatrix} + \begin{pmatrix} 0.506 \\ 0.763 \\ 0.887 \\ 0.737 \\ 0.632 \\ 0.376 \\ 0.732 \\ 0.660 \\ 0.221 \\ 0.530 \\ 0.730 \\ 0.621 \\ 0.806 \\ 0.659 \\ 0.639 \\ 0.738 \end{pmatrix}$$

5.7 Observed Indicator Variables

scheme, market orientation. However, the influence of market orientation on control is more consistent and slightly stronger than its influence on structure. For convenience we label Ksi 4 and Ksi 5 as MOA/internal and MOB/external respectively. The path from MOA/internal to control has a standardized coefficient of .320 and a T value of 2.1. Similarly, the path from MOB/external to control has a standardized coefficient of .388 and a T value of 2.5. The relationship between structure and market orientation is not quite so straightforward. The path from MOA/internal to structure has a standardized coefficient of -.090 and a T value of 0.5 while the path from MOB/external to structure has a standardized coefficient of .453 and a T value of 2.5.

$$\Phi = \begin{pmatrix} -0.534 & & \\ 0.365 & -0.292 & \\ & & \\ & & 0.444 \end{pmatrix}$$

5.8 Matrix of correlations between KSI variables.

The path from MOA/internal to structure is not significant. A possible technical explanation for this lack of significance is that MOA/internal and MOB/external are quite highly correlated. It is possible that the observed path coefficient from MOB/external to structure was allowing for all common variance between the two constructs and structure. To test for this potentiality the model was run with just MOA/internal and a second time with just MOB/external. The observed relationships remained unchanged. MOA/internal had no significant effect on structure even when MOB/external was not in the model and MOB/external did have a significant effect on structure regardless of the presence or absence of MOA/internal. The reasonable conclusion is that a substantive difference exists between MOA/internal and MOB/external. Specifically, as suggested in chapter 4, when the content of the scales is reexamined MOA/internal represents the firm's internal understanding and communication of customer needs and MOB/external represents the firm's coordination with the customer. Both of these issues are relevant for market orientation but they seem to imply rather different structural requirements. MOA/internal does not have any specific structural requirments while MOB/external implies a more decentralized structure.

Given the impact of the contingencies and of market orientation on structure and control, the impact that structure and control, in turn, have on marketing effectiveness and on organizational power, is quite unequivocal. The path from structure to marketing effectiveness has a standardized coefficient of .276 and a T value of 2.2. The path from control to marketing effectiveness has a standardized coefficient of .284 and T value of 2.2. The path from structure to power has a standardized coefficient of .372 and a T value of 3.1, while the path from control to power has a standardized coefficient of .284 and a T value of 2.3. All of these relationships are both reasonably strong and statistically significant.

A final feature of this model which should be noted is that the path from power to marketing effectiveness is relatively small, at .120 and with a T value of 0.9 is not statistically significant. The implication is that power *per se,* does not directly influence marketing effectiveness. This result is actually in line with the original predictions made in this study.

Results of Regression Tests for Interactions

It was predicted that interpretive schemes, i.e. market orientation, would interact with size, technology and environmental uncertainty, the traditional contingencies of contingency theory, in determining structure and control. Multiple regression is the most straightforward way to test for interactions.

In total, four regressions were run. In the first two, market orientation was combined into one construct, size, technology and environmental uncertainty were the other independent variables (resulting in three interaction variables) and structure and control respectively were the dependent variables. In the second market orientation was treated as two constructs (resulting in six interaction variables).

In all four regressions the same general procedure was followed. The first order variables were forced into the regression and then the second order interactions were allowed to enter in a stepwise fashion. The interaction terms were represented as the product of market orientation and each of the other first order variables. Forcing the first order constructs into the equation initially prevents very slight interactions from preventing the first order variables to enter, which might be the result if all variables and interactions were entered stepwise. Standardized variables were used for the regressions.

When market orientation was entered as one variable, no interactions met the .05 threshold level of significance to enter the equation. SPSSx reports the T values that would have resulted had the interaction terms been forced into the equations. Tables 5.2 and 5.3 report those T values. From the tables it is clear that none of the interaction terms approach significance when the first order terms are in the equation and market orientation is considered as a combined variable.

On the other hand, when market orientation is split into the two component parts, as discussed above, two significant interactions appear (of a possible total of twelve). As shown in table 5.4, with control as the dependent variable the interaction between environment and MOB/external is significant at the .10 level. When structure is the dependent variable the interaction between size and MOA/internal is significant at the 0.05 level.

Chapter six discusses the theoretical implications of the findings reported in this chapter at length.

Table 5.2
Testing for Interactions
Control as Dependent

Variable	T value	Sig
Environment/Mkt Orientation	-.914	.36
Technology/Mkt Orientation	.135	.89
Size/Mkt Orientation	-.653	.51

Table 5.3
Testing for Interactions
Structure as Dependent

Variable	T value	Sig
Environment/Mkt Orientation	-.069	.95
Technology/Mkt Orientation	.393	.69
Size/Mkt Orientation	.266	.79

Table 5.4
Testing for Interactions
Control as Dependent
Market Orientation as Two Constructs
(MOA/internal; MOB/external)

Variable	T value	Sig
Environment/MOA/internal	.681	.50
Environment/MOB/external	-1.865	.06
Technology/MOA/internal	.423	.67
Technology/MOB/external	-.089	.93
Size/MOA/internal	-.070	.94
Size/MOB/external	-.53	.60

Table 5.5
Structure as Dependent
Market Orientation as Two Constructs
(MOA/internal; MOB/external)

Variable	T value	Sig	Std T value	Sig
Environment/MOA/internal	-.406	.69	.076	.94
Environment/MOB/external	1.219	.22	1.143	.26
Technology/MOA/internal	1.123	.26	.793	.43
Technology/MOB/external	-.445	.66	-.221	.83
Size/MOA/internal	-1.307	.19	-2.695	.008
Size/MOB/external	1.136	.26	.828	.41

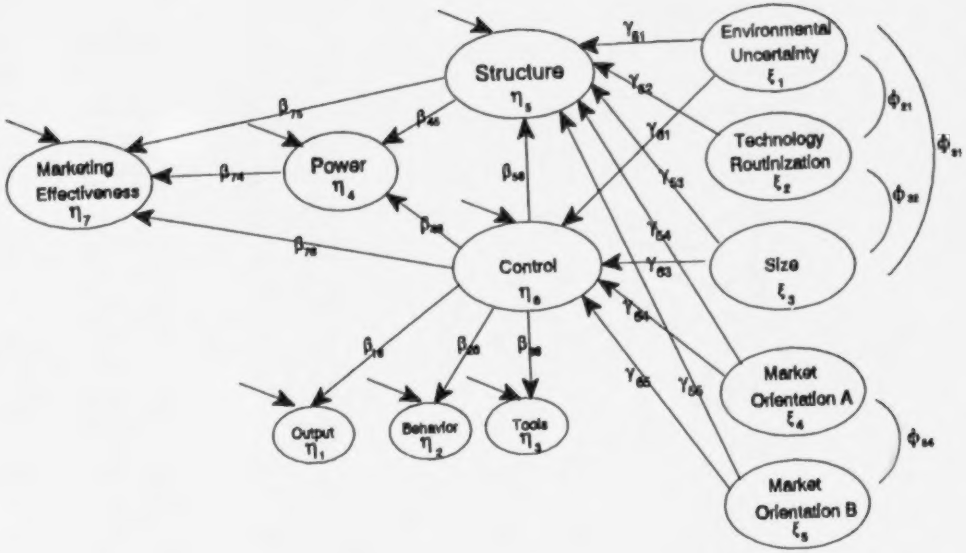

Environmental Uncertainty ξ_1
Technology Routinization ξ_2
Size ξ_3
Market Orientation A ξ_4
Market Orientation B ξ_5
Structure η_5
Control η_6
Power η_4
Marketing Effectiveness η_7
Output η_1
Behavior η_2
Tools η_3
γ_{51}
γ_{52}
γ_{61}
γ_{53}
γ_{54}
γ_{63}
γ_{64}
γ_{65}
γ_{55}
β_{75}
β_{45}
β_{74}
β_{56}
β_{46}
β_{76}
β_{16}
β_{26}
β_{36}
ϕ_{21}
ϕ_{32}
ϕ_{31}
ϕ_{54}

Figure 5.1 Specification of the Final Model

CHAPTER 6: IMPLICATIONS

Chapter 5 discusses the more technical aspects of the structural model. The present chapter elaborates on the relationships implied by the structural model and places the findings within the context of other relevant organizational theory literature. The chapter begins by considering the role of the traditional contingencies of contingency theory within the final model, noting that the influence of the contingencies, especially size, is rather unimpressive. The chapter then considers the findings relating to structure, control and power. The results of the present study are in harmony with Ranson, Hinings and Greenwood (1980) and Greenwood, Hinings and Brown (1990). The bulk of the chapter focuses on the role of the interpretive scheme, market orientation, in determining organizational structure and control, and, ultimately, in influencing marketing effectiveness. The issue of the interaction of the interpretive schemes with the contingencies is also considered. The chapter concludes with a review of the propositions put forward in chapter 2 and a report of the outcomes of those propositions.

The Traditional Contingencies

When tested within the structured equation context of LISREL, the influence of the traditional contingencies of contingency theory on organizational structure and control are somewhat muted. None of the contingencies have an effect on both structure and control while size does not have a significant effect on either.

Recall that the scales of the contingencies are interpreted as follows. A high score on environmental uncertainty means that the respondent considers the environment to be relatively unstable. A high score on technology routinization implies that the firm uses relatively routine technology and a high score on size means a large firm. On the other hand, a high score on structure indicates a decentralized firm and the higher the scale value of control the more intense are the control mechanisms which are in place.

Given the above interpretations, the strongest effect (indeed, the only significant effect) on structure by a contingency construct is the effect of technology routinization. The standardized coefficient of the path from technology to structure is -.311 with a LISREL T-value of 2.2. This coefficient means that if the rest of the model is held constant, every standard deviation change in technology routinization will result in a .311 standard deviation change in structure in the opposite direction of the change in routinization. In other words, highly routine technologies imply more centralized structures whereas non-routine technologies imply more decentralized structures. Inasmuch as non-routine technology implies a greater number of exceptions to deal with it makes intuitive sense that a decentralized structure would be in order. That is, a highly centralized structure would be unable to process the high number of exceptions encountered. This finding is also consistent with Woodward's (1965) initial study linking technology types to span of control. Her types, moving from mass production to job shop (batch) to continuous process correlated with decreasing spans of control which implies increased decentralization. Arguably the movement from mass production to batch production to continuous flow, also implies increasingly less routine technology. To reiterate, this interpretation puts the present study findings in harmony with Woodward's (1965).

The results of the present study aree also in accord with Fry's (1982) observations based on a meta analysis of 140 technology-structure relationships reported in the literature since 1965. Of particular relevance he concludes,

> Given the hodgepodge of operationalizations, it is surprising to find such consistent findings for the routine-nonroutine dimension. ... As technology moves from routine to nonroutine, subunits adopt less formalized and centralized structures (p. 548).

In contrast to the effect of technology routinization on structure, the final model shows no relationship between technology routinization and control. The modification index for the path between routinization and control that LISREL provides as an estimate of the improvement in the model's fit that would result if the path was opened (thereby portraying a causal relationship from routinization to control) is a minuscule 0.281. The implication is that opening this path would likely result in a poorer overall fit for the model as a degree of freedom would be lost in the process. This is a very interesting finding and may explain the ambivalence of the previous research on the effects of technology on structure that Miller and Dröge (1986) refer to. That is, to the degree that other studies have confounded structure with control systems, as defined in the context of the present study, the perceived effects of technology would be dampened or completely cancelled out.

The contingency which most directly influences control is environmental uncertainty. It has a standardized coefficient of -.172 and a LISREL T-value of 1.4. This T-value is actually somewhat low given that Jörsekog and Sörbom (1989) recommend that a T-value of 2 or greater should be considered significant. However, when we consider that a LISREL T-value is calculated by dividing the path coefficient by its standard error, although it is appropriate to treat any T-values greater than 1 but less than 2 with some caution, one is reluctant to completely discard them, inasmuch as, by definition, they are larger than their standard error.

The implication of the coefficient between environmental uncertainty and control is that if other factors of the model are held constant a one standard deviation change in environmental uncertainty will result in a change of .172 standard deviations in the score of control. The interpretation of this observed relationship is that higher levels of environmental uncertainty lead to less intense control systems. Miller and Dröge (1986) in a succinct summary of the accumulated findings of the effect of environmental uncertainty note:

> It is generally argued that increased [environmental] uncertainty makes an administrative task more complex and nonroutine. This, in turn, is said to require less formalized and more flexible structures (Burns and Stalker, 1961).... (p 545)

To the degree that "less formalized" can be equated with "less intense" this study directly supports Miller and Dröge's (1986) summary of the effect of environmental uncertainty on control.

In contrast to its marginal effect on control, environmental uncertainty does not have any significant effect on structure. The standardized coefficient for the path from environmental uncertainty to structure is 0.016 and the LISREL T-value is less than one (0.1), indicating that the unstandardized coefficient is actually smaller than its standard error (i.e. the coefficient should not be considered to be significantly different than 0).

Size, the remaining contingency, did not have a causal influence on either structure or control. The standardized path coefficient from size to structure is 0.041 with a LISREL T-value 0.3. The standardized path coefficient from size to control is 0.112 with a LISREL T-value of 0.9. Both of these paths, therefore, should be considered statistically insignificant.

The suggestion that organizational size does not have a causal influence on organizational structure and control is perhaps the most surprising finding of this study, in terms of traditional contingency theory. A strong relationship between size and structure and control has been one of the most consistent findings of contingency based research. Donaldson (1985) asserts that size is consistently positively associated with formalization and negatively associated with centralization. Hickson and McMillan (1981) argue that the same relationships actually hold in a wide variety of cultural settings.

The most likely explanation for the present study finding no particular size effect is simply that the present sample has too small of a range on this variable to demonstrate a relationship. The offices in the current study ranged in size from 5 to 300 persons. In contrast the number of employees in many of the earlier contingency studies ranged upward into the thousands. For example, McMillan et al. (1973) report that the organizations they studied varied from 260 members to 25,000. In other words, even the largest offices in the present study would have been at the extreme low end of the size scale in the McMillan et al. (1973) study.

Structure, Control and Power

The findings support the original contention of this thesis that structure and control should be considered as two separate constructs. Indeed, the findings in this regard are somewhat more radical than initially proposed in that in the final model not only are control and structure depicted as separate constructs, there is only a weak causal relationship shown between them.

The weak observed relationship between structure and control (coefficient -0.364, T value=1.8) is both unexpected and curious. It questions an expectation, stated in the theoretical development that structure and control are necessarily related. It also casts doubt on earlier work by Ouchi (1977) in which, as quoted in chapter 2, he concluded that, "The structure of an organization is not isomorphic with its control system. [But] structure is related to control" (p. 110).

Two possible explanations for the weak relationship between structure and control suggest themselves. The first is that this is a generalizable finding and can be explained with Meyer and Rowan's (1977) notion of decoupling. They observe that, in certain instances at least,

> Organizational structures are created and made more elaborate with the rise of institutionalized myths, and, in highly institutionalized contexts, organizational action must support these myths. But an organization must also attend to practical activity. The two requirements are at odds. A stable solution is to maintain the organization in a loosely coupled state (p. 360).

Structure then, may be established as the visible, public face of the organization and have important symbolic roles but actually have little impact on the work flow and accomplishments of the organization.

The second, and more likely, explanation is that this finding is an anomaly of the particular type of organization studied. Due to the nature of their business, accounting firms have virtually no margin for error, or at least serious error, in the work they do for their clients. Therefore, quite powerful control systems have been established to prevent errors from occurring. However, because the organization is peopled primarily by professionals, structure *per se* is a rather less important issue and has been separated from control systems. Greenwood, Hinings and Brown (1990) argue this point convincingly.

> [In a typical business firm] there are divisions between ownership, management, and operational employees. In a partnership, by contrast, ownership, management and operations are fused. A partner is an owner of a firm, is involved in its overall management, and is a key production worker. (p. 730)

The thrust of the Greenwood, Hinings and Brown (1990) article is that the composition of professional service firms actually casts them as a unique type of organization which they have dubbed the P^2 organization reflecting the **p**rofessional and **p**artnership aspect of the organization. The most viable explanation then, is that the decoupling of control and structure that we have discovered is a feature of this newly described P^2 organization.

In addition to the relationship between structure and control being clarified, the final model depicts both structure and control somewhat differently than originally proposed, as is discussed in detail in chapter 5. To restate the findings, structure was originally portrayed as a second order construct which caused the first order constructs, configuration, and centralization. This depiction did not fit the data well and the structure was recast as a first order model measured by four variables. This change reflects the fact that the number of levels in an organization (i.e. configuration) in practice tends to be related to centralization. It is fair to note that this change really should not be considered a major revision of the original model.

The construct control underwent two major changes. Originally depicted as a third order construct causing the first order constructs, power and tools, and the second order construct focus, which itself caused the constructs output and behaviour, the final model of control first discards the notion of focus as an intervening construct between control and output and behaviour, and secondly, portrays the construct power as resulting from both control and structure, rather than simply as a component of control. The change to the way power is modeled is sufficiently interesting to merit separate discussion below. Prior to that discussion though, it is worth noting that the three remaining constructs associated with control all have quite a strong relationship with that construct.

The standardized path coefficient from control to output is .65. This path was originally fixed so as to establish a scale for control. As a consequence, no T-values are calculated. The standardized path coefficient from control to behaviour is .93 with a LISREL T-value of 4.9 and the standardized path coefficient from control to tools is .68 and a LISREL T-value of 4.5. These figures imply that if the construct control changes by one standard deviation the constructs of output, behaviour and tools would change by .65, .93 and .68 standard deviations respectively.

The construct, power, has undergone an intriguing change in the model. Originally shown as a first order construct caused by control, in the revised model power is shown as an outcome of both control and structure. The standardized path coefficient from control to power is .284 with a LISREL T-value of 2.3. Therefore, holding the rest of the model constant, a one standard deviation change in control will result in a .284 standard deviation change in power in the same direction. Recalling that a high score on the power construct implies the use of identitive power while a low score implies coercive power the implication is that more intensive control leads to the use, or the need for, identitive power. At the same time, the standardized coefficient of the path from structure to power is .372 with a LISREL T-value of 3.1. Again the interpretation of the path coefficient is that a one standard deviation change in structure will result in a .372 standard deviation change in the construct power. The conclusion is that decentralization also demands identitive power. This finding is quite compelling, suggesting that coercive power requires a centralized structure in order to be viable.

When positioning the findings of the present study relating to power within the greater body of literature pertaining to power, a number of observations should be made. For convenience, previous studies examining power can be categorized into four distinct, albeit interrelated, groups. The first group of researchers consider the nature of power from a relatively abstract perspective. This body of literature is exemplified by, among others, Lukes (1974), Walsh, Hinings, Greenwood and Ranson (1981), and Hardy (1985). They come to the common conclusion that power is extremely difficult to precisely define but that properly one's understanding of power should include the concept of "latent conflict" (Walsh et al., 1981) or, in Hardy's (1985) terms, "Unobtrusive power."

A second, particularly influential, approach to the study of power examines the sources of subunit power within organizations. A significant body of work has developed exploring and expanding this theme. The initial development of this stream of research can be attributed to Hickson et al.

(1971), Hinings et al. (1974) and Salancik and Pfeffer (1974). Hinings et al., in particular, empirically demonstrated that subunit power arises from the subunit's ability to deal with uncertainty on behalf of the organization, its centrality in the organization's work flow and its nonsubstitutability. Subsequent studies in the main have supported these initial findings.

The third approach to dealing with power in the literature, takes a strong managerial focus and considers the exercise and functions of power by individuals and managers within organizations. Kanter (1979) and Pfeffer (1981) could be placed in this camp.

The final research approach dealing with power has focused on the types of power utilized within organizations. Tannenbaum and his associates are the main contributors to this line of inquiry. (See for example Tannenbaum and Rozgonyi, 1986.) It is to this fourth group that this present research can most closely be linked.

Tannenbaum and his associates take a predominately descriptive approach to their topic. Using French and Raven's (1959) five types of power as the variables of interest they conducted several cross-national comparisons of the relative importance of the variables when considered as the bases of supervisory power. Although the specific attributed importance of the five bases of power varied significantly across organizations, the ranking of the importance was quite stable from one country to another with coercive power consistently being ranked as the least important and legitimate power as the most important in determining acquiescence to a supervisor's wishes (Tannenbaum and Rozgonyi, 1986, p. 238).

It is inappropriate (and somewhat beside the point) to attempt to directly compare the findings of this present study to much of the earlier work in this area. The primary reason direct comparisons should be avoided is that while many of the individual measurement items are similar or identical between this study and the previous ones, the use and interpretation of those measurement items has changed substantially in the present research. Most fundamentally, most of the earlier studies treated the questions reported in appendix 3.1 as valid single item measures of the types of power being used with organizations. When utilized in that fashion it is impossible to ascertain the psychometric properties of the measures. Accordingly, as discussed in chapter 3, in this study the items were joined together to form a scale.

An additional difficulty encountered when attempting to compare the results of the present study to previous work is that many of the earlier studies asked respondents to rank the types of power in terms of importance whereas the present study required respondents to rate the importance of each item on a five point scale.

Therefore, rather than being considered a replication of the work of Tannenbaum and his associates, this present study extends their inquiry to include consideration of the causes underlying the types of power observed. To reiterate, the finding in this regard is that the type of power used within an organization is a function of centralization and intensity of control. High centralization coupled with low intensity of control leads to coercive power being utilized whereas the reverse antecedent conditions result in identitive power being used.

The realignment of the construct power is also very suggestive of Ranson, Hinings and Greenwood's (1980) work. With their argument that organizational structure is "constituted and constituting" they imply that power itself is embedded in the structure (and in present terms control systems) of the organization. Indeed, as noted in chapter 2, they explicitly state,

> Thus the structural framework is not some abstract chart but one of the crucial instruments by which groups perpetuate their power and control in organizations: groups struggle to constitute structures in order that they may become constituting (p 8).

The present finding supports Ranson, Hinings and Greenwood (1980) in the main. However, their position does imply a feedback loop between power and structure and control. The present model does not contain such a loop, nor do the modification indices suggest that the fit of the model would be significantly improved if feedback loops were included.

Therefore, the model should be thought as providing partial but not complete support for Ranson, Hinings and Greenwood's (1980) theoretical position.

Interpretive Schemes

A central theoretical question of this thesis concerns the effect of the interpretive scheme, market orientation, on structure and control and, indirectly, on marketing effectiveness within the framework of an overall contingency model. Market orientation was shown to have two factors. For convenience we refer to these factors as MOA/internal and MOB/external. As reported in chapter five, both factors of marketing orientation influence control and MOB/external influences structure. The standardized path coefficient from MOB/external to structure is .453 and has a LISREL T-value of 2.5. Therefore, if MOB/external changes one standard deviation, with the rest of the model held constant, structure will change .453 standard deviations in the same direction. A high score on MOB/external then, implies a decentralized structure. MOB/external also has a standardized path coefficient of .388 and a LISREL T-value of 2.5 leading to the construct control. Again, this implies that for every one standard deviation change in MOB/external, control will change by .388 standard deviations in the same direction. That is, a high score on MOB implies a more intense control system.

The effects of MOA/internal on control are also quite straightforward. The standardized path coefficient between these constructs is .320 with a LISREL T-value of 2.1. As with MOB/external, a one standard deviation change in MOA/internal will result in a .320 standard deviation change in control if the rest of the model is held constant. Note that the MOA and MOB have similar effects on control and that those effects are of approximately the same magnitude and significance.

Interpreting the effect of MOA/internal on structure is somewhat more problematic. The standardized path coefficient between MOA/internal and structure is -.090 and has a LISREL T-value of 0.5. As discussed in chapter 5, the LISREL T-value indicates that the relationship is not significant. The implication is that the different factors of market orientation have different effects on structure. MOB/external, which represents the organization's coordination with the customer, requires a decentralized structure. MOA, which represents the organization's internal understanding and communication of customer needs, has no strong effect on structure.

Marketing Effectiveness

Marketing effectiveness is modeled as resulting from control, structure and power. The path from power to marketing effectiveness is not significant. The path's standardized coefficient is .120 and the LISREL T-value is 0.9. The model suggests, then, that power does not directly influence marketing effectiveness. In contrast, structure and control do influence marketing effectiveness. The standardized path coefficient from structure to marketing effectiveness is 0.276 with a LISREL T-value of 2.2. If the remainder of the model is held constant, a one standard deviation change in structure (i.e. becoming more decentralized) will cause a 0.276 standard deviation change in marketing effectiveness (i.e. becoming more effective). The path from control to marketing effectiveness has a standardized coefficient of 0.284 and a LISREL T-value of 2.2. A one standard deviation change in control (i.e. more intense control), therefore, will result in a 0.284 standard deviation change in marketing effectiveness in the same direction as the change in control (i.e. greater marketing effectiveness), if the rest of the model is held constant.

The Effect of Market Orientation on Marketing Effectiveness

The model does not depict a direct effect between market orientation and marketing effectiveness. Examining the modification indices indicates that no significant improvement in the fit of the model would result from including a direct effect. The modification index between MOA/internal and marketing effectiveness is 0.004. The modification index between MOB/external and marketing effectiveness is also very low at 0.176. Nonetheless, the influence of marketing orientation on marketing effectiveness, as mitigated by structure and control, can easily be determined.

The indirect effect of market orientation on marketing effectiveness is calculated by multiplying the coefficients of each relevant individual path joining the two constructs and then adding the resulting products. Following this procedure, and referring to the figures reported in chapter 5, the effect of MOA/internal on marketing effectiveness is,

$$(\gamma_{64})\ (\beta_{76}) + (\gamma_{64})\ (\beta_{56})\ (\beta_{75}) + (\gamma_{54})\ (\beta_{75})$$
$$(.320)\ (.284) + (.320)\ (-.364)\ (.276) + (-.090)\ (.276)$$
$$0.033$$

The indirect effect of MOB/external on marketing effectiveness is,

$$(\gamma_{65})\ (\beta_{76}) + (\gamma_{65})\ (\beta_{56})\ (\beta_{75}) + (\gamma_{55})\ (\beta_{75})$$
$$(.388)\ (.284) + (.388)\ (-.364)\ (.276) + (.453)\ (.276)$$
$$0.196$$

In other words, a one standard deviation change in MOA/internal will ultimately cause a 0.033 standard deviation change in marketing effectiveness in the same direction as the change in MOA/internal (i.e. increasing MOA/internal ultimately results in an increase in marketing effectiveness). A one standard deviation change in MOB/external will ultimately cause a 0.196 standard deviation change in marketing effectiveness in the same direction. The effect of MOA/internal is weaker because of the negative value of the coefficient leading to structure.

Conclusions Regarding Marketing Effectiveness

The overall conclusion regarding marketing effectiveness is that neither structure and control processes nor market orientation in isolation cause marketing effectiveness. Rather, market effectiveness results from high levels of market orientation coupled with an appropriate structure and control systems. The present research suggests that "appropriate" entails having a decentralized structure with intense control systems.

This study represents a significant contribution to the understanding of marketing effectiveness. Most examinations of marketing effectiveness within the mainstream marketing literature consider the issue from the perspective of marketing strategy (e.g. Day and Wensley, 1988). The focus of inquiry is the influence of strategy on marketing effectiveness. The most unified work in this regard centres around the PIMS database. Kotabe and Duhan with Smith and Wilson (1991) summarize many of the main conclusions of the PIMS studies. These conclusions predominately revolve around the relationship of market share, time of entry into market, and product quality with profitability.

The present study lies outside of the above stream of inquiry in two ways. First, the independent variables considered by the present study are different than those included in the PIMS database. With the possible exception of organizational size, which could possibly be correlated with market share, there is no overlap between the causal variables considered in this study and those in the PIMS database. Even organizational size would be only distantly related to the PIMS concept of market share as the measure of size used in this study relates to the local office which is not necessarily closely correlated with the overall market share of a particular accounting firm.

Secondly, the present study has resulted in a more wholistic environmental and organizational model in its attempts to understand effectiveness than has the PIMS work. That is, while PIMS studies have focused on industry level data, such as market share, this study considers a broader range (and arguably both more theoretically interesting and managerially relevant) of environmental and organizational variables.

The Interaction of Interpretive schemes with Contingencies

A side issue in this study, but one with relevant theoretical overtones nonetheless, revolved around the relationship of the interpretive scheme, market orientation, with the contingencies, environmental uncertainty, technology routinization and size. It was predicted, in harmony with the work of Ranson, Hinings and Greenwood (1980), and Hinings and Greenwood (1988), that there would be an interaction between market orientation and the contingencies, particularly environmental uncertainty and technology routinization. However, as reported in detail in chapter 5, using multiple regression, only two (of a possible twelve) significant interactions were found.

This finding is rather unexpected and at best can be thought as only weakly supporting a major expectation of the writings on interpretive schemes. A possible flaw in the test that was conducted relates to the cross sectional nature of the data. Indeed, it must be acknowledged that Ranson, Hinings and Greenwood (1980) argue this very point forcefully in their original theoretical piece.

> If, however, we are to establish clearly the degree to which actors in fact construct their worlds, if we are to provide a causal explanation that goes beyond statistical uniformities, we must conserve but transcend both the previous levels of analysis, and lock our explanation into a *temporal* mode which focuses on the historical development of structures (p 4). [Emphasis in the original.]

It is possible then, that stronger interactions would appear in data from a longitudinal study. Alternatively, it is possible, given longitudinal data, that interpretive schemes from earlier time periods could be shown to influence a firm's perceptions of its contingencies in a later period. Unfortunately, neither of these possibilities can be explored within the context of the present study. In the meantime, as noted above, the current findings offer only mild support of a key expectation of interpretive schemes.

Status of the Propositions

Based on the theoretical framework, developed in chapter 2, six propositions, and several sub propositions, were put forward. It is now appropriate to consider the outcome of those propositions. The first four propositions can be tested directly from the structured equation model, while the remaining two are tested via the multiple regression reported in chapter 5.

The first proposition states that "Market oriented firms will be less centralized than non market oriented firms." Remembering that a high score on structure indicates a decentralized organization, this proposition implies that the path coefficient between market orientation and structure will be positive and significant. The path between MOA and structure is negative and of marginal significance, whereas the path between MOB and structure is positive and significant. Proposition one, therefore, is only partially supported.

Proposition two states that "Market oriented firms will employ more intense control systems than will non market oriented firms." Given that a high score on the construct control indicates a high level of intensity of control, the proposition implies a positive and significant path coefficient between market orientation and control. Both MOA and MOB, in fact, have a positive and significant path coefficient so proposition two is supported by the findings of this study.

Propositions three and four state that the structure and control system, respectively, "resulting from market orientation, in turn, will result in marketing effectiveness." These propositions imply a positive and significant path coefficient between structure and control, and marketing effectiveness. Both of these path coefficients are positive and significant so propositions three and four are also supported.

Proposition five states that:

P5: with organizational control as the dependent variable market orientation will interact with:

P5a: environmental uncertainty;

P5b: technology; and

P5c: size.

Proposition six states that:

P6: with organizational structure as the dependent variable market orientation will react with:

P6a: environmental uncertainty;

P6b: technology; and

P6c: size.

As discussed in detail above, when market orientation is split into its two component factors, proposition 5a and 6c are supported. In sum then, proposition one is partially supported, propositions two, three and four are fully supported, and propositions five and six are partially supported.

CHAPTER 7: SUMMARY AND CONCLUSIONS

The questions guiding this study have been threefold, "What is the precise nature of organizational structure and control? What is the influence of the interpretive scheme, market orientation, on structure and control? And what is the subsequent effect of the structure and control system resulting from market orientation on marketing effectiveness?" In order to address these issues, an examination of the literature concerning organizational structure and control was undertaken. Particular attention was paid to the initial ground breaking studies in this area as, to a very large degree, the findings of these studies continue to be reflected in current thinking regarding structure and control.

Based on Pugh et al. (1968) and Lawrence and Lorsch (1967) and agreeing with Miller and Dröge (1986), and planting the theoretical roots of this study firmly in contingency theory, it was argued that any study examining the root causes of organizational structure and control should minimally include environmental uncertainty, technology and organizational size as explanatory variables. Accordingly, these variables were included in the present study, and considered along with market orientation within a contingency framework. A large causal model was developed and tested which considered the influence of market orientation and the contingencies on structure and control and, ultimately, on marketing effectiveness.

The nature of control and organizational structure needed more careful definition than the literature currently afforded. Control was defined in this study as "All aspects of the processes whereby it is assured that strategic decisions are executed." Furthermore, a distinction was made between the basis of control, the focus of control and the tools of control. It was argued that the basis of control was power, which in practice will range from coercive to identitive, the focus of control will be on either behaviour or output, as discussed by Ouchi (1977), and the tools of control include the methods and documentation whereby organizations achieve control. Daft and Macintosh (1985) present a list of the tools of control.

The focus of control, the level and type of power used, as well as the tools employed, all result from the construct control. Control itself should be thought of as a unidimensional construct. Control will vary in intensity. Intensity is defined as the degree to which control systems guide and dominate the activities of the organization. Based on the theoretical discussion, a structural model was developed which reflected the proposed theoretical resolution.

In order to test the structural model a mail based survey of medium sized Canadian accounting firms in 123 Canadian cities was undertaken. In total, 514 partners of 200 accounting firms in 123 Canadian cities were contacted. Following two subsequent mailings two databases were established. The main database contained 137 unique offices and was used solely for confirmatory testing. The second database contained 89 duplicate offices and was used for measurement refinements and exploratory adjustments to the model.

The structural model tested is quite similar to the original theoretical model proposed. Market orientation has been split into two related constructs and structure has been simplified to a first order single factor model. However, there are two more substantial changes. The first is the realignment of the construct, power. Whereas initially, power was seen as an aspect of control, in the revised model it has an identity in its own right separate from but caused by both control and structure. The revised formulation has interesting theoretical implications. The second change is the absence of a meaningful relationship between organizational structure and organizational control. The implications of the latter two changes are discussed individually, below. Initially, the ramifications of the model as a whole are considered.

The proposed model is supported in substance but not in detail. The original model, reproduced in figure 7.1, suggests that marketing effectiveness is an outcome of appropriate organizational structures and methods of control. Organizational structures and control systems, in turn, are the outcome of the three traditional contingencies of contingency theory and the interpretive scheme, market orientation. The revised model, shown in figure 7.2, supports this general outline. However, several caveats are noted.

The nature and interrelationship of structure and control were modified. In the case of control, these modifications were quite significant. Power was realigned from being a component of control to being a separate construct caused by both structure and control. Power was modeled as also contributing to marketing effectiveness. Additionally, when the size and significance of the calculated coefficients is considered, the three contingencies, environmental uncertainty, technology and size, are shown to have different impacts on structure and control.

Summary of the Theoretical Findings

This study expands our understanding of several important areas. Among those areas are, the nature of structure and control, the influences of the traditional contingencies of contingency theory on structure and control, the influence of a particular interpretive scheme (market orientation) on structure and control, and the antecedents of marketing effectiveness.

Structure and control are shown to result from similar causal structures. However, this study found only a weak link between structure and control. It is suggested, following Greenwood, Hinings and Brown, (1990) that this latter finding may be a feature of P^2 organizations.

Related to the nature of structure and control, the construct power underwent a significant evolution during the course of this study. Originally depicted as a component of control, power is now shown to be an outcome of both control and structure. This understanding of power is very close to the theoretical position of Ranson, Hinings and Greenwood (1980).

The impact of the traditional contingencies of contingency theory, environmental uncertainty, technology routinization, and size, on structure and control, was relatively unimpressive. When considered simultaneously, within a structured equation framework, and with the alternate causal explanation of interpretive schemes, the contingencies exhibited only moderate influence on structure and control. Environmental uncertainty had a marginally significant effect on control, technology routinization had a significant effect on structure, and size, normally a key predictor within contingency theory, did not have a significant effect on either structure or control.

Interpretive schemes clearly influence control systems and organizational structure. A key theoretical issue addressed in this study revolves around the impact of interpretive schemes on the composition of an organization. Using the interpretive scheme, market orientation, as the test case, it has been demonstrated that interpretive schemes influence both structure and control. It is noted, though, that the impact on control systems is both slightly stronger and more consistent than the impact on structure. The path coefficients between both MOA/internal and MOB/external and control are positive and statistically significant, indicating that market orientation results in more intense control systems being utilized. The paths between MOA/internal and MOB/external and structure, in contrast, are not in harmony. MOA/internal has no significant effect on structure while MOB/external results in a decentralized structure.

Marketing effectiveness is influenced, in roughly equal proportion, by both structure and control. The path coefficients from both structure and control to marketing effectiveness are both positive and statistically significant.

Limitations of the Study

The study is limited primarily by its sample, and its cross-sectional nature. The focus of this study has been on medium sized English Canadian accounting firms. Positively, this sample allows the researcher to eliminate many possible confounding variables, such as nationality, industry sector, and working language of the organization. Negatively, the sample may also limit the wider applicability of the findings. Arguably though, at a minimum, following Greenwood, Hinings and Brown, (1990) the study is directly applicable to other P^2

types of organizations. Indeed, only in the instance of the relationship of structure and control to each other, is there any compelling reason, *post hoc*, to believe that the *type* of organization may be underlying the observed results. On the other hand, the nature of the present sample may explain the lack of an observed relationship for the contingency size. The size variable in the present study ranges from 5 to 300. In studies reporting an effect of size this variable ranged upwards into the thousands. It is both possible and likely, then, that the lack of a significant relationship between size and structure or control is a function of the range of that variable in the present study.

This study was conducted at one point in time and considers a broad cross section of accounting firms. Certain caveats must always be noted when dealing with such data. The main difficulty involves establishing a temporal order to the relationships considered. It was noted that the cross-sectional nature of the data may be affecting in particular the tests of the interaction of interpretive schemes with the contingencies. It should also be acknowledged, however, in the study's favour, that the particular analytical technique employed, structured equation modelling, is designed to address some of the shortcomings of cross-sectional data.

Future Research

The results of this study are richly suggestive of opportunities for additional research in the future. Three main categories of research possibilities are implied. The first relates directly to interpretive schemes. The present study has considered only one interpretive scheme, market orientation. Examples of possible candidates for alternative interpretive schemes abound. Marketing textbooks are replete with references to firms with "production orientations" or "sales orientations." Do such orientations actually exist, and if they do, do they imply specific organizational structures and control systems? Miller and Friesen (1977) have empirically identified ten types of organizations. It would not be difficult to include their work under the umbrella of interpretive schemes. Is there a causal relationship implied between the identified interpretive schemes and the structures and control systems they observe? Future research could focus on identifying and cataloguing other interpretive schemes and studying their affect on organization structure and control systems.

The second category of research issues relates to the nature of control, structure and power. Clearly, this study has still not completely resolved this matter. Also, the specific relationship between structure and control remains curious. Was the weak relationship between these two constructs discovered in this study truly a function of the type of organization or have prior assumptions about the close relationship of the constructs been in error?

The third category of research possibilities relates to marketing effectiveness and organizational effectiveness in general. Research questions include examining other causes of marketing effectiveness: as discussed above, marketing effectiveness is currently underresearched. Similarly, the relationship between marketing effectiveness and overall organizational effectiveness, is virtually unexplored. Marketing writers take it as a given that, in the long term at least, marketing effectiveness is a necessary, and likely the most important, component and contributor to overall organizational effectiveness. Will this assumption bear up under scrutiny?

Likewise, marketing researchers tend to assume that market orientation is a necessary organizational attitude to hold if marketing effectiveness is to be achieved. So much so that some writers, most notably and Kohli and Jawarski (1990), define and measure market orientation tautologically. Rather than assuming the efficacy of marketing orientation there is a need to examine the relationship between other interpretive schemes and both marketing effectiveness and overall organizational effectiveness. Can other interpretive schemes still result in marketing effectiveness? Can other interpretive schemes result in overall organizational effectiveness but not marketing effectiveness? The field is fertile with future possibilities.

Conclusions of the Study

This study began with consideration of the influence of the interpretive scheme, market orientation, on the structure and control processes, and consequently on the marketing effectiveness, of organizations. In ascertaining the relationship it was first necessary to draw conclusions about the nature of control systems and structure *per se*.

Structure should be considered narrowly as the "organizational chart" of a firm or organization. A good summary measure of the organizational chart is degree of centralization. Control should be thought of as "all aspects of the processes whereby it is assured that strategic decisions are executed." The most appropriate way to describe control is in terms of intensity. The intensity of control will determine the level of behavioral control and output control and the tools of control that are used within an organization. Power, a topic related to control and structure, should be considered as an outcome of control and structure. Intense control systems, coupled with decentralized structures will result in relatively high levels of identitive power within an organization.

A key theoretical and empirical contribution of this study is the conclusion that the interpretive scheme, market orientation, does indeed influence organizational structure and control. It results in a relatively high level of control intensity. Further, one element of market orientation, that concerned with understanding and coordinating with the external constituencies, leads to a decentralized structure. The aspect of market orientation dealing with internal coordination has no significant effect on structure. It is also concluded, given the presence of market orientation, that structure and control result in marketing effectiveness.

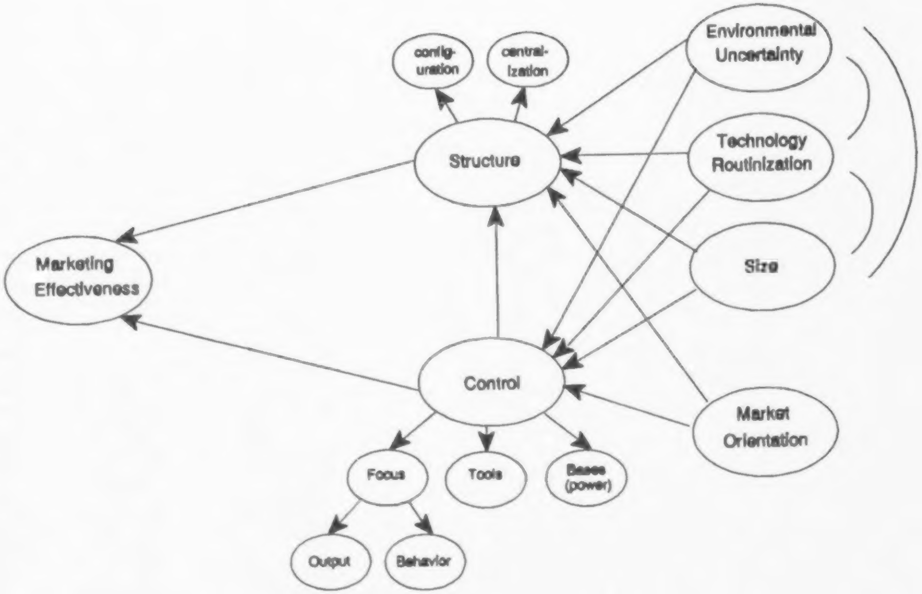

Environmental Uncertainty
Technology Routinization
Size
Market Orientation
config-uration
central-ization
Structure
Control
Marketing Effectiveness
Focus
Tools
Bases (power)
Output
Behavior

Figure 7.1 Original Model

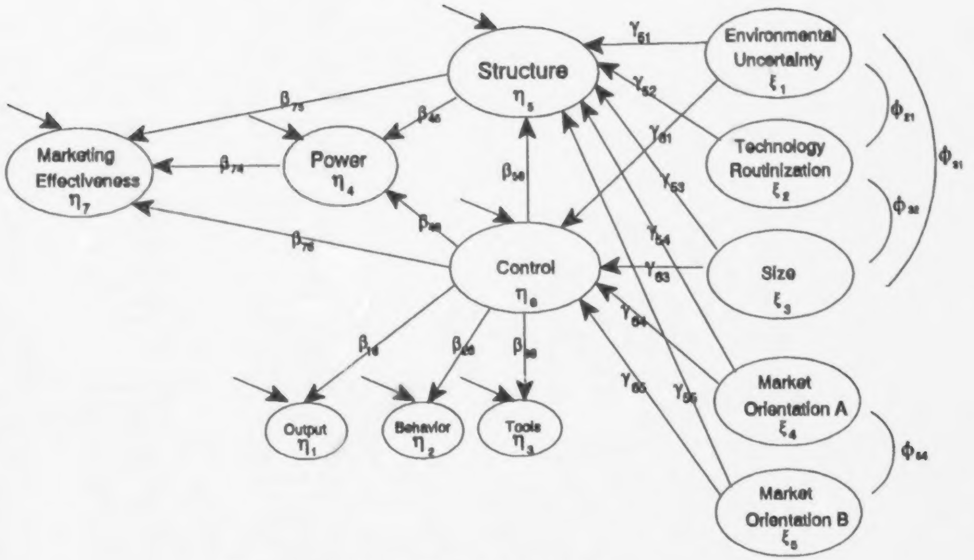

Environmental Uncertainty ξ1
Technology Routinization ξ2
Size ξ3
Market Orientation A ξ4
Market Orientation B ξ5
φ21
φ32
φ31
φ54
γ51
γ52
γ61
γ53
γ54
γ63
γ64
γ65
γ55
Structure η5
Control η6
Power η4
Marketing Effectiveness η7
Output η1
Behavior η2
Tools η3
β75
β45
β74
β56
β46
β76
β16
β26
β36

Figure 7.2 Final Model

Bibliography

Aaker, D. A., & Day, G. S. (1983). Marketing research. Toronto: John Wiley & Sons.

Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modelling in practice: A review and recommended two-step approach. Psychological Bulletin, 101, 411-423.

Bielby, W. T., & Hauser, R. M. (1977). Structural equation models. Annual Review of Sociology, 3, 137-161.

Blau, P. M. (1970). A formal theory of differentiation in organizations. American Sociological Review, 35, 201 - 218.

Burns, T., and Stalker, G.M. (1961). The management of innovation. London, Tavistock.

Cameron, K.S. (1986). Effectiveness as Paradox. Management Science, 32, 539-553.

Canadian Society of Chartered Accountants. (1989). Directory of Canadian Chartered Accountants. Toronto: Author.

Child, J. (1973). Strategies of control and organizational behaviour. Administrative Science Quarterly, 18, 1-17.

Churchill, G. A. (1979). A paradigm for developing better measures of marketing constructs. Journal of Marketing Research, 16, 64-73.

Daft, R. L. (1992). Organization theory and design (4th ed.). St. Paul, MN: West.

Daft, R. L. & Macintosh, N. B. (1984). The nature and use of formal control systems for management control and strategy implementation. Journal of Management, 10, 43-66.

Day, G.S., and Wensley, R. (1988). Assessing advantage: A framework for diagnosing competitive superiority. Journal of Marketing, 52(2), 1-20.

Dillman, D. A. (1978). Mail and telephone surveys: The total design method. New York: John Wiley & Sons.

Donaldson, L. (1985). In defence of organizational theory: A reply to the critics. London: Cambridge University Press.

Drăgan, I., Chelcea, S., Cristea, P., Grigorescu, P., Stefănescu, S., and Zamfir, C. (1986). Romania. In Authority and Reward in Organizations an International Perspective, A.S. Tannenbaum and T.A. Rozgonyi (Codirectors). Ann Arbor: Institute for Social Research.

Etzioni, A. (1965). Organizational control structure. In J.G. March (Ed.), Handbook of Organizations (pp. 650-677). Chicago: Rand McNally.

Felton, A. P. (1959). Making the marketing concept work. Harvard Business Review, 37(July/August), 55-65.

French, J.R.P., and Raven B. (1959). The bases of social power. In Studies in Social Power, Dorwin Cartwright (ed.). Ann Arbor: Institute for Social Research.

Fry, L. W. (1982). Technology-structure research: Three critical issues. Academy of Management Journal, 25, 532-552

Govindarajan, V. (1988). A contingency approach to strategy implementation at the business-unit level: Integrating administrative mechanisms with strategy. Academy of Management Journal, 31, 828-853.

Greenwood, R., Hinings, C. R., & Brown, J. (1990). The P^2-Form of strategic management: Corporate practices in the professional partnership. Academy of Management Journal, 33, 725-755.

Hayduk, L. A., (1987). Structural equation modelling with LISREL essentials and advances. Baltimore: John Hopkins University Press.

Hardy, C. (1985). The nature of unobtrusive power. Journal of Management Studies, 22(4), 384-399.

Hickson, D. L., Hinings, C. R., Lee, C., Schneck, R., & Pennings, J. (1971). A strategic contingencies theory of intraorganizational power. Administrative Sciences Quarterly, 16, 216-229.

Hickson, D. J., & McMillan, C. J. (1981). Organization and nation: The Aston programme IV. Gower Publishing.

Hill, C. W. L. (1988). Corporate control type, strategy, size and financial performance. Journal of Management Studies, 25, 403-417.

Hinings, C.R., Brown, J.L., & Greenwood, R. (1991). Change in an autonomous professional organization. Journal of Management Studies, 28, 375-393.

Hinings, C.R., & Greenwood, R. (1988). The dynamics of strategic change. Oxford: Blackwell.

Hinings, C. R., Hickson, D. L., Pennings, J., & Schneck, R. (1974). Structural conditions of interorganizational power. Administrative Sciences Quarterly, 19, 22-44.

Hinings, C. R., Pugh, D. S., Hickson, D. J., & Turner, C. (1967). An approach to the study of bureaucracy. Sociology, 1, 61-72.

Javidan, M., Murray, A. & Reschenthaler G. (1987). The organizational audit questionnaire. Unpublished manuscript.

Jöreskog, K. G. (1977). Structural equation modelling in the social sciences: Specification, estimation and testing. In Applications of Statistics, Krishnaiah, P. R. (ed.) pp. 265-287. North Holland Publishing Company.

Jöreskog, K. G., & Sörbom, D. (1989). LISREL 7 A guide to the program and applications, (2nd ed.). Chicago: SPSS Inc.

Kanter, R.M. (1979). Power failure in management circuits. Harvard Business Review, July-August, 65-75.

Khandwalla, P. N. (1977). The design of organizations. New York: Harcourt, Brace, Jovanovich.

Kim, J., Mueller, C. W. (1978). Factor analysis: Statistical methods and practical issues. Quantitative Applications in the Social Sciences, 14. Beverly Hills: Sage Publications.

Kohli, A.K., and Jawarski, B.J. (1990). Market orientation: The construct, research propositions, and managerial implications. Journal of Marketing, 54(2), 1-18.

Kotabe, M. and Dunhan, D.F., with Smith, D.K., and Wilson, R.D. (1991) The perceived veracity of PIMS strategy principles in Japan: An empirical inquiry. Journal of Marketing, 55,1, 26-41.

Kotler, P. (1977). From sales obsession to marketing effectiveness. Harvard Business Review, (Nov.) p. 67-75.

Kotler, P. & Turner, R. (1981). Market management: Analysis, planning,and control. Scarborough, ON: Prentice-Hall Canada Inc.

Lawrence, P. R., & Lorsch, J. W. (1967). Differentiation and integration in complex organizations. Administrative Science Quarterly, 12, 1-47.

Loehlin, J.C. (1987). Latent variable models an introduction to factor, path and structural analysis. Hillsdale, NJ: Lawrence Erlbaum Associates.

Lusch, R. F., & Laczniak, G. R. (1987). The evolving marketing concept, competitive intensity and organizational performance. Journal of the Academy of Marketing Science, 15(3), 1-11.

Lukes, S. (1974). Power: A radical view. London: MacMillan.

McCarthy, E. J. & Perreault, W. D. (1984). Basic Marketing, 8th ed. Homeward, Illinois: Irwin.

McKitterick, J. B. (1957). What is the marketing management concept? The Frontiers of Marketing Thought and Science, pp. 71-82. Chicago: American Marketing Association.

McMillan, C.J., Hickson, D.J., Hinings, C.R., and Schneck, R.E. (1973). The structure of work organizations across societies. Academy of Management Journal, 16, 555-569. (Reprinted in Organization and Nation The Aston Programme IV D.J. Hickson and C.J. McMillan (eds.) 1981.)

Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. American Journal of Sociology, 2 (Sept.), 340-363.

Miles, R.E., and Snow, C.C. (1978). Organizational strategy, structure, and process. New York: McGraw Hill.

Miller, D. (1988). Relating Porter's business strategies to environment and structure: Analysis and performance implications. Academy of Management Journal, 33, 280-280.

Miller, D., & Dröge, C. (1986). Psychological and traditional determinants of structure. Administrative Sciences Quarterly, 31, 539-560.

Miller, D., & Friesen, P. (1977). Strategy-making in context: Ten empirical archetypes. The Journal of Management Studies, Oct., 253-280.

Mintzberg, H. (1988). Opening up the definition strategy. In J.B. Quinn, H. Mintzberg, R.M. James, The Strategy Process: Concepts, Contexts, and Cases (pp. 13-20). Englewood Cliffs, NJ: Prentice Hall.

Mintzberg, H. (1990). The design school: Reconsidering the basic premises of strategic management. Strategic Management Journal, 11, 171-195.

Narver, J.C., and Slater, S.F. (1990). The effect of market orientation on business profitability. Journal of Marketing, 54(4), 20-35.

Nunnally, J. C. (1967). Psychometric Theory. New York: McGraw Hill.

Nunnally, J. C. (1978). Psychometric Theory, 2nd ed. New York: McGraw Hill.

Ouchi, W. G. (1977). The relationship between organizational structure and organizational control. Administrative Science Quarterly, 22, 95-113.

Ouchi, W. G. (1979). A conceptual framework for the design of organizational control mechanisms. Management Science, 25, 833-848.

Ouchi, W. G. (1980). Markets, bureaucracies and clans. Administrative Science Quarterly, 25, 129-141.

Ouchi, W. G., & Maguire, M. A. (1975). Organizational control: Two functions. Administrative Science Quarterly, 20, 559-569.

Pfeffer, J. (1981). Power in organizations. Cambridge, Massachusetts: Ballinger Publishing Company.

Perrow, C. (1967). A framework for comparative organizational analysis. American Sociological Review, 32, 194-208.

Price, J. L. (1972). Handbook of organizational measurement. Toronto: D. C. Heath & Company.

Pugh, D. S., & Hickson, D. J. (1976). Organizational structure in its context: The Aston programme I. Gower Publishing.

Pugh, D. S., Hickson, D. J., Hinings, C. R., & Turner, C. (1963). A conceptual scheme for organizational analysis. Administrative Science Quarterly, 8, 289-315.

Pugh, D. S., Hickson, D. J., Hinings, C. R., & Turner, C. (1968). Dimensions of organization structure. Administrative Science Quarterly, 13, 65-105.

Pugh, D. S., & Hinings, C. R. (1976). Organizational structure extensions and replications: The Aston programme II. Gower Publishing.

Pugh, D. S., & Payne, R. L. (1977). Organizational behaviour in its context: The Aston programme III. Gower Publishing.

Ranson, S., Hinings, C. R., & Greenwood, R. (1980). The structuring of organizational structures. Administrative Science Quarterly, 25, 1-17.

Robbins, S. P. (1990). Organization theory structure, design, and applications (3rd ed.). New Jersey: Prentice Hall.

Salancik, G.R., and Pfeffer, J. (1974). The bases and use of power in organizational decision making: The case of the university. Administrative Sciences Quarterly, 19, 453-473.

Selznick, A. (1957). Leadership in administration: A sociological interpretation. New York: Harper and Row.

Snell, S.A. (1992). Control theory in strategic human resource management: The mediating effect of administrative information. The Academy of Management Journal, 35, 292-327.

Tannenbaum, A.S., Rozgonyi, T.A. (1986). Authority and reward in organizations: An international perspective. Ann Arbor: University of Michigan, Institute for Social Research.

Walsh, K., Hinings, C. R., Greenwood, R., & Ranson, S. (1981). Power and advantage in organizations. Organizational Studies, 2, 131-152.

Williamson, O. E. (1975). Markets and hierarchies: Analysis and antitrust implications. New York: Free Press.

Woodward, J. ed. (1965). Industrial organization: Theory and practice. London: Oxford University Press.

Appendix 1
Measures of Power

Based on Khandwalla (1977 p. 649)

Variable name: style1.

[reversed]
1. How far within your office do you observe senior administrators and/or partners using force ("Might overcomes right"; "If you cannot make a man think as you do make him do as you think") as a mode of resolving their disagreements over personal matters and corporate issues?

Seldom used 1 2 3 4 5 6 7 Used very commonly

Based on Bachman in Price (1972 p. 149)

Listed below are five reasons generally given by people when they are asked *why* they do the things their superiors suggest or want them to do. Please indicate how important each reason normally is in your office by circling the appropriate number after each statement.

Variable name: why1.

1. I respect him or her personally, and want to act in a way that merits his or her respect and admiration.

Seldom considered 1 2 3 4 5 6 7 Very important

Variable name: why2.

2. I respect his or her competence and judgement about things with which he or she is more experienced than I.

Seldom considered 1 2 3 4 5 6 7 Very important

Variable name: why3.

3. He or she can give special help and benefits to those who cooperate with him or her.

Seldom considered 1 2 3 4 5 6 7 Very important

Factor Matrix

Variables	Factor Loading
Style1	-.49908
Why1	.67852
Why2	.83358
Why3	.33966

Only one factor was extracted: eigenvalue 1.51969, 38 percent of variance accounted for.

Appendix 2
Measures of Control

Scales original to this study

When judging the performance of an individual in your office, how likely are people in your office to engage in the following forms of evaluation?

[Behaviour Control]

Variable name: eval1.

1. Observe the individual performing his or her tasks.

Not normally considered	1	2	3	4 Moderately important	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.

Variable name: eval3.

3. Consider attendance habits, (e.g., time of arrival at work or meetings, working late etc.)

Not normally considered	1	2	3	4 Moderately important	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.

Variable name: eval4.

4. Consider how well the person fits into the firm.

Not normally considered	1	2	3	4 Moderately important	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.

Variable name: eval5.

5. Consider how closely the individual follows standard operating procedures of the firm.

Not normally considered	1	2	3	4 Moderately important	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.

Factor Matrix

Variable	**Factor Loadings**
Eval1	.31531
Eval3	.39797
Eval4	.72860
Eval5	.49701

Only one factor was extracted: eigenvalue 1.03568, 25.9 percent of variance accounted for.

[Output Control]

Variable name: eval8.

8. Consider the amount and type of new business that the individual refers or generates.

Not normally considered	1	2	3	4	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.
				Moderately important				

Variable name: eval9.

9. Consider how closely the individual adheres to budgeted billable hours.

Not normally considered	1	2	3	4	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.
				Moderately important				

Variable name: eval10.

10. Consider how consistently the individual completes work on time on or under budget.

Not normally considered	1	2	3	4	5	6	7	Very important, Explicitly considered; special forms exist to document this aspect of performance.
				Moderately important				

Appendix 3
Measures of Tools of Control

From Khandwalla (1977)

Please rate the extent to which the following is used or done in your office.

Variable name: cntrl1.

1. Cost control of operations by fixing standard costs and analyzing the variations of actual costs from these standards.

Not used at all 1 2 3 4 5 6 7 Used extensively.

Variable name: cntrl2.

2. Systematic evaluations of managerial and senior staff personnel.

Not used at all 1 2 3 4 5 6 7 Used extensively.

Variable name: cntrl3.

3. Long-term forecasting of your office's billings and profits.

Not used at all 1 2 3 4 5 6 7 Used extensively.

Variable name: cntrl4.

*4. Long-term forecasting of the technology relevant to your firm or office's products, services or operations.

Not used at all 1 2 3 4 5 6 7 Used extensively.

* Subsequently dropped as a result of the Lisrel analysis.

Factor Matrix

Variable	Factor Loadings
Cntrl1	.44698
Cntrl2	.48233
Cntrl3	.86565
Cntrl4	.65674

Only one factor extracted: eigenvalue 1.61308, 40.3 percent of variance accounted for.

Appendix 4
Measures of Configuration
Based on Greenwood, Hinings and Brown (1990)

4. How many levels in the hierarchy are there in your office, including support staff, counting from the top (Office Managing Partner or equivalent) to the bottom? _____

Appendix 5
Measures of Centralization
Original scales by Aiken and Hage in Price (1972 p. 45, 46)

How true are the following statements about your office? Please circle the number of the most appropriate response.

Variable name: cent1.

1. There can be little action taken here until a senior administrator approves a decision.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: cent2.

2. A person who wants to make his or her own decisions would be quickly discouraged here.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: cent3.

3. Even small matters have to be referred to someone higher up for a final decision.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: cent4.

*4. I have to consult with other partners before I do almost anything.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: cent5.

*5. Any decision I make has to have the approval of other partners.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

* Subsequently dropped as a result of the Lisrel analysis

Factor Matrix

Variable	Factor Loading
Cent1	.54572
Cent2	.44448
Cent3	.70919
Cent4	.85194
Cent5	.71065

Only one factor was extracted: eigenvalue 2.22914; 44.6 percent of variance accounted for.

Appendix 6
Measures of Marketing Effectiveness

Based on Kotler (1977)

Please indicate how well each of the following statements describes your office's marketing program by circling the appropriate number under the statement.

Variable name: prod1.

1. New and existing products and services are designed with the needs and wants of specific markets in mind.

No. Management thinks primarily in terms of selling existing and new products to whoever will buy them.	1	2	3	4	5	6	7	Yes. Management thinks in terms of serving the needs and wants of well defined markets chosen for their long run growth and profit potential.

Variable name: prod2.

2. Different products and services are developed for different segments of the market.

No. The market is treated as broadly similar throughout.	1	2	3	4	5	6	7	Yes distinct markets have been identified and addressed.

Variable name: prod3.

3. The new product/service development process is well organized.

No. The system is ill-defined and poorly handled.	1	2	3	4	5	6	7	Yes the system is well structured and professionally staffed.

Variable name: prod4.

4. Marketing research studies of clients needs, influences on the choice of accounting firms, and competitive behaviour are up-to- date.

No. The most recent study was conducted several years ago [or never].	1	2	3	4	5	6	7	Yes. A complete study market research has study has been conducted within the past 6 months.

Variable name: prod5.

5. Management knows the profitability of different products and services.

No. Profitability figures are only available for the office or firm as a whole.	1 2 3 4 5 6 7	Yes. Profitability figures are available based on a number of criterion.

Variable name: prod6.

6. Overall, how satisfied are you with the marketing program of your local office?

Not satisfied at all. There is a lot of room for improvement.	1 2 3 4 5 6 7	Very satisfied. It would be very difficult to improve on what we are doing.

Factor Matrix

Variable	Factor Loading
Prod1	.60953
Prod2	.62217
Prod3	.74380
Prod4	.62882
Prod5	.68673
Prod6	.42061

Only one factor extracted: eigenvalue 2.35578; 39.3 percent of variance accounted for.

Appendix 7
Measures of Environmental Uncertainty [Reversed]
Based on Khandwalla (1977, p. 641, 642)

How would you characterize the external environment within which your office functions? Please circle the number on the scale which best indicates where your office fits between the following pairs of statements.

Variable name: envir2.

2. Very dynamic, changing rapidly in technical, economic and cultural dimensions.	1 2 3 4 5 6 7 Mixed	Very stable; virtually no change.

Variable name: envir4.

4. Very unpredictable; very hard to anticipate the nature or direction of changes in the environment.	1 2 3 4 5 6 7 Mixed	Very predictable; very easy to forecast the future state of affairs in the environment.

Variable name: envir6.

6. Very strong cyclical or other **periodic** fluctuation.	1 2 3 4 5 6 7 Mixed	Virtually no **periodic** fluctuation.

Variable name: envir8.

8. Technologically, a very sophisticated and complex environment.	1 2 3 4 5 6 7 Mixed	An environment demanding little in the way of technological sophistication.

Factor Matrix

Variable	Factor Loading
Envir2	.76710
Envir4	.56590
Envir6	.67805
Envir8	.46701

Only one factor was extracted: eigenvalue 1.58652; 39.7 percent or variance accounted for.

Appendix 8
Measures of Technology Routinization
Original scales by Hage and Aiken in Price (1972 p.151,152)

Part 2. We would now like to find out some things about the nature of the work done in your office and about how decisions are made in your office. After each of the following statements please circle the number of the response that best describes your situation.

Variable name: work1.

1. Would you describe your job as being highly routine. somewhat routine, somewhat non-routine, or highly non-routine?

1	2	3	4
highly routine	somewhat routine	somewhat non-routine	highly non-routine

Variable name: work2.

2. People here do the same job every day.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: work3.

3. One thing people like around here is the variety of the work.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: work4.

*4. Most jobs have something new happening every day.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

Variable name: work5.

5. There is something different to do every day.

1	2	3	4
Definitely true	More true than false	More false than true	Definitely false.

* Subsequently dropped as a result of the Lisrel analysis.

Factor Matrix

Variable	Factor Loading
Work1	.59159
Work2	.78317
Work3	.75971
Work4	.61350
Work5	.61517

Only one factor extracted: eigenvalue 2.29532; 45.9 percent of variance accounted for.

Appendix 9
Measure of Organizational Size

Original Measure developed for this study

Some questions about your office.

1. Including Partners, how many people are employed in this office in total? ____

Appendix 10
Measures of Market Orientation
[Factor 1 MOA/Internal]

Original scales developed for this study

Please indicate whether you agree or disagree with the following statements by circling the appropriate number beside the statement (1 = strongly disagree; 7 = strongly agree).

	Strongly disagree					Strongly agree
Variable name: mark2.						
2. Marketing is a firm wide responsibility.	1 2 3 4 5 6 7					
Variable name: mark3.						
3. Most successful new products/-services result from a deep understanding of the end customer or client.	1 2 3 4 5 6 7					
Variable name: mark5.						
5. Successful Marketing depends on close communications between all areas of a firm.	1 2 3 4 5 6 7					

Measures of Strategic Orientation
Based on Javidan, Murray and Reschenthaler (1987)
[Factor 2 MOB/External1]

In preparing or evaluating a new strategic option (e.g., development of new product/service or expansion of operations for existing products/services), there are many considerations about which decision-makers must be concerned. In the following list of possible concerns please indicate how important you feel a particular issue is in your local office by circling the most appropriate number beside the issue (1 = little or no importance; 7 = extremely important).

	Little or no importance	Extremely important

Variable name: strat2.

11. The effect the products or services resulting from the new idea may have on existing products/services. 1 2 3 4 5 6 7

Variable name: strat3.

12. Establishing the price and volume at which the proposed product/service should be sold. 1 2 3 4 5 6 7

Variable name: strat4.

13. The degree to which customer needs may be satisfied by the new product/service idea. 1 2 3 4 5 6 7

Variable name: strat5.

*14. The degree to which customer needs may be altered by the new product/service idea. 1 2 3 4 5 6 7

Variable name: strat6.

15. The impact the new product-/service idea will have on employees. 1 2 3 4 5 6 7

Variable name: strat7.

*16. The broad impact on the communities in which we operate. 1 2 3 4 5 6 7

* Subsequently dropped as a result of the Lisrel analysis.

Factor Matrix

Variable	Factor 1	Factor 2	Factor 3
Strat2	.13433	.13899	.41486
Strat3	.44943	.06619	.28976
Strat4	.78342	.62069	-.00073
Strat5	.29955	.28044	.32120
Strat6	.36417	.09487	.27750
Strat7	.14030	-.02822	.68046
Mark2	.78293	-.62131	-.00045
Mark3	.41469	.02615	.08302
Mark5	.35025	-.10340	.37896

Final Statistics

Factor	Eigenvalue	Pct of Var.	Cumulative Pct.
1	1.98343	22.0	22.0
2	.89479	9.9	32.0
3	1.04978	11.7	43.6

Appendix 11

1. Market orientation specified as one factor.

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \end{pmatrix} = \begin{pmatrix} \lambda_{11} \\ \lambda_{21} \\ \lambda_{31} \\ \lambda_{41} \\ \lambda_{51} \\ \lambda_{61} \\ \lambda_{71} \\ \lambda_{81} \end{pmatrix} (\xi_1) + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \end{pmatrix}$$

2. Market orientation specified as two factors.

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \end{pmatrix} = \begin{pmatrix} \lambda_{11} & \\ \lambda_{21} & \\ \lambda_{31} & \\ & \lambda_{42} \\ & \lambda_{52} \\ & \lambda_{62} \\ & \lambda_{72} \\ & \lambda_{82} \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \end{pmatrix} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \end{pmatrix}$$

3. Market orientation specified as three factors.

$$\begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \end{pmatrix} = \begin{pmatrix} \lambda_{11} & & \\ \lambda_{21} & & \\ \lambda_{31} & & \\ & \lambda_{42} & \\ & & \lambda_{53} \\ & & \lambda_{63} \\ & & \lambda_{73} \\ & \lambda_{82} & \end{pmatrix} \begin{pmatrix} \xi_1 \\ \xi_2 \\ \xi_3 \end{pmatrix} + \begin{pmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \\ \delta_4 \\ \delta_5 \\ \delta_6 \\ \delta_7 \\ \delta_8 \end{pmatrix}$$

With respect to appendix 10:

x_1 = mark2

x_2 = mark3

x_3 = mark5

x_4 = strat2

x_5 = strat3

x_6 = strat4

x_7 = strat5

x_8 = strat6

Appendix 12

Original specification of structure.

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \end{pmatrix} = \begin{pmatrix} \lambda_{11} & \\ \lambda_{21} & \\ \lambda_{31} & \\ & \lambda_{42} \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{pmatrix}$$

$$\begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} \gamma_{11} \\ \gamma_{21} \end{pmatrix} (\xi_1) + \begin{pmatrix} \zeta_1 \\ \zeta_2 \end{pmatrix}$$

η_1 = centralization; η_2= configuration; ξ_1 = structure.

Structure as two factors

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \end{pmatrix} = \begin{pmatrix} \lambda_{11} & \\ \lambda_{21} & \\ \lambda_{31} & \\ & \lambda_{42} \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{pmatrix}$$

$$\begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix} \begin{pmatrix} \eta_1 \\ \eta_2 \end{pmatrix} + \begin{pmatrix} 0 \\ 0 \end{pmatrix} (\xi_1) + \begin{pmatrix} \zeta_1 \\ \zeta_2 \end{pmatrix}$$

Structure as one factor

$$\begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \end{pmatrix} = \begin{pmatrix} \lambda_{11} \\ \lambda_{21} \\ \lambda_{31} \\ \lambda_{41} \end{pmatrix} (\eta_1) + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{pmatrix}$$

$$(\eta_1) = (0)\,(\eta_1) + (0)\,(\xi_1) + (\zeta_1)$$

With respect to appendix 4 and 5:

y_1 = cent1
y_2 = cent2
y_3 = cent3
y_4 = levels

Appendix 13
Firms Included in The Study[2]

1. Arthur Andersen & Co.
2. BDO Ward Mallette
3. Collins Barrow
4. Collins Barrow-Maheu Noiseux
5. Deloitte and Touche
6. Doane Raymond
7. Dunwoody & Company
8. Fraser, Matthews/Ward Mallette
9. Fuller Jenks Landau
10. Geo. A. Welch & Company
11. Hyde Houghton
12. Laventhol and Horwath
13. Laventhol and Horwath/Sax, Zimmel, Stewart
14. Leblanc Nadeau Bujold/Maheu Noiseux
15. MacKay & Partners
16. Maheu Noiseux-Collins Barrow
17. Meyers, Norris, Penny & Co.
18. Mintz & Partners
19. Orenstein & Partners
20. Pannell Kerr MacGillivray
21. Richter, Usher & Vineberg
22. Zittrer, Siblin, Stein, Levine

---

[2] Duplicate firm names appear reflecting ongoing mergers during the time this study was conducted as well as strategic alliances between firms that differed somewhat by province.